ATHENA
Access to cultural heritage networks across Europe

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ATHENA

Report on existing standards applied by European museums

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e*Content*plus

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[1] OJ L 79, 24.3.2005, p. 1.

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1. Introduction

1.1 The purpose of work package 3

Work package 3 of the ATHENA project (WP3) is tasked with:

1. Reviewing the different standards in use by museums;
2. Facilitating the mapping of those standards to a common metadata standard;
3. Assessing the requirements for the persistent identification of digital objects and collections;
4. Producing tools to support the conversion of museums' data into the common harvesting format for ingestion into the main Europeana service.

WP3 also works together with other work packages in the project. In particular WP3 works closely with WP4 and WP7: feeding information about standards for their work. Also the survey which is the basis of this deliverable was extended to include collecting information on IPR issues for use within WP6.

1.2 Overview of the deliverable

This deliverable is the first outcome of this work and is based on a survey of the content that partners contracted to provide to Europeana through the ATHENA project. These collections are described, in outline, in the *Description of Work* for the project (pp10-33).

The first part looks at *Some basic concepts*, a familiarity with these will be useful for the understanding of the rest of the deliverable.

Next we give an exposition of the range key standards being used by museums in a *Standards landscape*. This is done in order to provide a kind of 'snap shot' of the current situation. As with any landscape the view may vary over time, some standards may become more popular, others might disappear, but we believe that the major features will remain.

The next section looks at the results of the ATHENA *Standards Survey*. The analysis will answer a set of questions about the standards use in museums in Europe as *exemplified* by the collections in the survey.

Finally we draw some *Conclusions* about the use of standards in European museums with its implications for the ATHENA project and for Europeana in general.

Two appendices contain the:

- ATHENA survey questions;
- ATHENA content surveyed for this deliverable.

2. Some basic concepts

2.1 Standard

The British Standards Institution (BSI), the world's oldest standards setting organisation (1901), says:

> Put at its simplest, a standard is an agreed, repeatable way of doing something. It is a published document that contains a technical specification or other precise criteria designed to be **used consistently as a rule, guideline, or definition**. Standards help **to make life simpler** and to increase the reliability and the effectiveness of many goods and services we use. Standards are created by **bringing together the experience and expertise of all interested parties** such as the producers, sellers, buyers, users and regulators of a particular material, product, process or service." (our **Bolding**)

To the advantages given above can be added: ***delivering interoperability*** (see below).

2.1.1 Types of standards

There are a number of standards typologies. A common one has:

- ***De facto***
  Standards not formally recognised by a standards setting body, but is widely used and is recognised by the sector using it as a standard. These are quite common in the IT industry where the dominance of Microsoft, for good or ill, has led to some of its products becoming *de facto* standards (e.g. *Word for Widows*). They may not be the best solution to a situation but they are often the most economically successful;
- ***De jure***
  Standards formally recognised by a standards setting body (e.g. ISO). They are developed by the common consent of a group of interested parties, with no one party being dominant. However they take a significant amount to time to develop and establish, sometimes leading to them being over taken by technological developments.

Standards can also be looked at with regard to the environment they were produced and used:

- ***In-house***
  Standards developed and used in a particular organisation, for a particular purpose. An example of this is a local place name terminology. This would extend an existing national which only covers geography at a level of granularity too coarse to be useful at the local level;
- ***Community***
  Standards developed by a set of organisations in the same sector for use within that sector. The UK museum documentation standard *SPECTRUM* was developed with domain experts with the aim to benefit from their experience;
- ***National***
  Standards developed for use within a single country and recognised at a national level. Nationally recognised terminologies are examples of such standards;
- ***International***
  Standards recognised and used throughout the world, nearly always approved by an international standards setting body, e.g. ISO 8601 is an international standard for date and time.

For some standards it is possible for them to begin as one type and then, with further work and taking part in an approval process, become another type. For example the *CIDOC Conceptual Reference Model (CRM)*, was originally developed by the CIDOC Documentation Standards Working Group as a community standard it is now an ISO standard (ISO 21127:2006).

Another type of standard that is worth examining in detail is the ***open standard***.

2.1.2 Open standards

Kenneth Krechmer gives ten requirements for open standards[1]:

1. ***Open Meeting*** – all may participate in the standards development process.
2. ***Consensus*** – all interests are discussed and agreement found, no domination.
3. ***Due Process*** – balloting and an appeals process may be used to find resolution.
4. ***Open IPR*** – how holders of IPR related to the standard make available their IPR.
5. ***One World*** – same standard for the same capability, world-wide.
6. ***Open Change*** – all changes are presented and agreed in a forum supporting the five requirements above.
7. ***Open Documents*** – committee drafts and completed standards documents are easily available for implementation and use.
8. ***Open Interface*** – supports proprietary advantage (implementation); each interface is not hidden or controlled (implementation); each interface of the implementation supports migration (use).
9. ***Open Access*** – objective conformance mechanisms for implementation testing and user evaluation.
10. ***On-going Support*** – standards are supported until user interest ceases rather than when implementer interest declines.

Most of the requirements are about the development of a standard. The aim is to make this process transparent and democratic.

It is not clear if any standards conform to all the requirements. However formal national and international standards are more likely to adhere to most of them, at least to some extent.

Open IPR, *Open Access and On-going Support* are the most important considerations for a potential user of a standard. Therefore in our descriptions of standards we have indicated which we consider 'open' in these three areas.

[1] **Krechmer, Kenneth**. "Open Standards Requirements" in *The International Journal of IT Standards and Standardization Research*, Vol. 4 No. 1, January – June 2006. See: http://www.csrstds.com/openstds.pdf

2.2 Digitisation

Digitisation is the process of transformation of original (analogue) material into digital form. There are three distinct types of digitisation:

- ***Reproduction***
  Digitisation with the aim to reproduce the original material in digital form as accurately as possible. This category includes images, sound, and video;
- ***Retrieval***
  Digitisation with the aim to find and retrieve original material. This category includes scanned and indexed documents, for example contracts, letters etc. The purpose is not an accurate reproduction, but to increase usage of the material;
- ***Procedural***
  Digitisation with the aim of capturing information from analogue (paper) museum catalogue systems with the aim to implement automated collection management.

This deliverable will mainly look at the standards associated with reproduction digitisation. However it will also discuss some of the standards associated with the other two.

2.3 Interoperability

Interoperability can be defined as:

> *"The ability of the systems, procedures and culture of an organisation to be managed in such a way as to maximised opportunities for exchange and re-use of information, whether internally or externally"*[1]

This definition was written in the context of maximising the sharing of the collective knowledge of an organisation. Here we are attempting to maximise the opportunities for European cultural organisations to share their content with IST projects (and therefore benefit from that process).

Paul Miller further divides interoperability into 6 types[2]:

- ***Technical interoperability*** – facilitated by using common technical standards (e.g. file types, metadata, etc.);
- ***Semantic interoperability*** – facilitated by using common vocabularies for the terminologies used in data (e.g. thesauri);
- ***Political/ Human interoperability*** – facilitated by understanding and overcoming the barriers caused by the different experiences and agendas of users and information providers;
- ***Inter-community interoperability*** – facilitated by recognising differences between discipline communities and overcoming them by working together (e.g. museums, archives and libraries);
- ***Legal interoperability*** – facilitated by following the legal restraints imposed on information providers (e.g. *Freedom of Information* and *Data Protection* legislation);

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[1] **Ashby, Helen, McKenna, Gordon and Stiff, Matthew**. *SPECTRUM Knowledge*. mda. 2001, p63

[2] **Miller, Paul** 'Interoperability. What is it and Why should I want it?' in *Ariadne*, 21. UK Office for Library and Information Networking (UKOLN). June 2000. See: http://www.ariadne.ac.uk/issue24/interoperability/

- ***International Interoperability*** – facilitated by recognising and overcoming the barriers caused by cultural and linguistic differences.

This deliverable is concerned mainly with the facilitation of technical and semantic interoperability. The other four types may be the subject of other projects.

2.4 Metadata

Metadata has become such a popular term it is worth examining its use in more detail.

2.4.1 Definition difficulties

In its origin it is clear that the metadata has taken as its model words like *metaphysics*, *metalanguage*, where the 'meta' element of the word indicates:

> *"**2.** (of an academic discipline) concerned with the concepts and results of the discipline"*[1]

The use of 'data' element has led to the tendency to restrict its usage to digital 'objects'. For example an often quoted definition is that its: 'Data about data'[2]. This implies that metadata is concerned solely with world of text and multimedia on the Internet or on computers.

Metadata has emerged in recent years as a new 'buzz-word' for information professionals, causing confusion and/or unease in some quarters. For example Tony Gill writes:

> *"… the term 'metadata' is now increasingly used in contexts where the term 'data' would have sufficed just a few short years ago (for example, descriptions of people, objects and events).."*[3]

In this wider context metadata can be data usually known in the cultural heritage sector as: collections management data, catalogue records and exhibition texts. In fact any 'data' can be thought of as 'metadata'.

So why use the term 'metadata' at all? Perhaps looking at some of the key aspects of metadata is the best way to find an answer.

2.4.2 Aspects of metadata

A key idea in metadata is that of a ***resource***. This is the entity that the metadata is about. A danger here is to restrict the idea of a resource to texts and multimedia 'objects' accessible over the Internet and in particular on the Web. ***A resource is anything one wishes to describe and give access to in some way***. A resource can be:

- Texts (electronic **or** paper-based);
- Physical objects;
- Multimedia (image, sound, and video, etc.);
- Software;
- Persons;

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[1] *Collins Concise Dictionary. Third Edition*. (1995), p835.

[2] See: http://www.webopedia.com/TERM/m/metadata.html

[3] **Gill, Tony**. 'Metadata and the Web', in Baca, M. (ed.) *Introduction to Metadata: Pathways to Digital Information. 3rd rev*. Getty Information Institute. 2008. See http://www.getty.edu/research/conducting_research/standards/intrometadata/metadata.html

- Organisations;
- Places;
- Events;
- Concepts;
- Collections of all the above.

Also some resources are ***surrogates*** for another resource. A surrogate is a representation of resource in some other form. For example: a digital image or photograph of an artwork, or a virtual reality representation of a place, or a facsimile of an object.

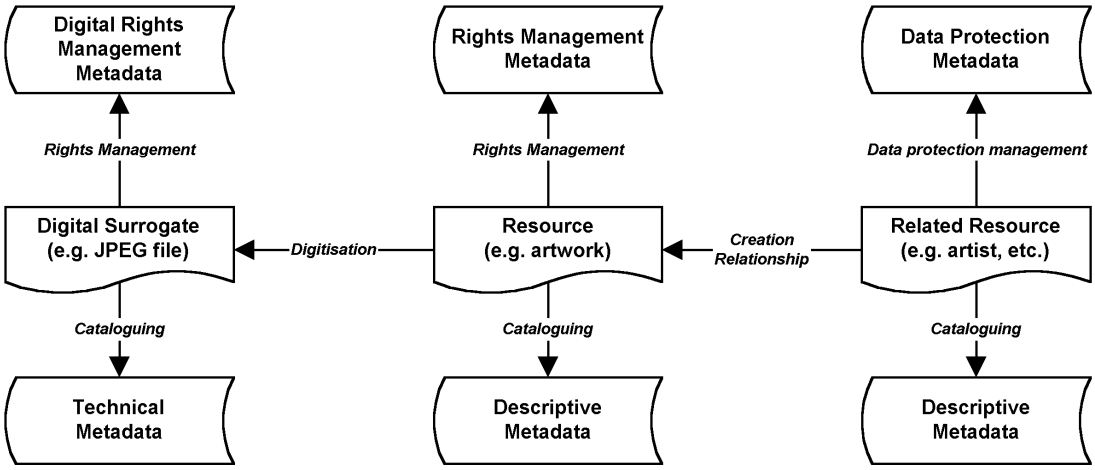
It is important to distinguish between a resource and its surrogate when creating metadata for the two entities. Metadata for a surrogate should not describe the original resource. For example, an original artwork might but out of copyright, but a photograph of it might not be.

Resources can also be ***related*** to each in ways other than of original and surrogate. Examples include: creation, making available (e.g. publication), and use.

A number of different typologies for metadata have been proposed. For example Anne Gilliland-Swetland[1] gives:

- ***Administrative*** – Managing and administering resources (e.g. acquisition, rights, location);
- ***Descriptive*** – Describing or identifying resources (e.g. catalogue records);
- ***Preservation*** – Preservation management of resources (condition, and migration data);
- ***Technical*** – How a system functions or metadata behave (e.g. formats, encryption, passwords);
- ***Use*** – The level and type of use of resources (user and use tacking information).

The relationships between different resources and their associated metadata can be summarised in the diagram below:



[1] **Gilliland-Swetland, Anne J**. 'Setting the stage', in Baca, M. (ed.) *Introduction to Metadata: Pathways to Digital Information. 3rd rev.* Getty Information Institute. 2008.
See: http://www.getty.edu/research/conducting_research/standards/intrometadata/setting.html

Another type of metadata is that of ***resource discovery***. This is metadata aimed at allowing potential user of a resource to find information they need in order to decide whether or not they want to have access to a resource itself. This is a similar situation to putting a term into a Web search engine, viewing the results, and deciding to 'click' on the link. The aim of resource discovery is to give a more accurate and relevant search result for the user.

The most well know resource discovery metadata is ***Dublin Core***. This gives information on a resource, gives its ***identifier***, and uses the identifier to give ***access*** to that resource. Access is direct if the identifier is an URL or similar, or indirect in the case of an ISBN (for example).

Finally there is a sense of there being a ***metadata movement*** taking place with large effort being put into the open development of metadata ***schema***s. Schemas are the description of a metadata ***element*** set, together with a description of how the elements are structured. In turn these schemas are being tested and indeed adopted by organisations and governments. The metadata 'bandwagon' is impossible to ignore!

2.4.3 A 'better' definition?

Metadata is much more than the simple definition given above. Perhaps a more comprehensive one is:

> ***Structured information about any kind of resource, which is used to identify, describe, manage or give access to that resource.***

3. Standards landscape

3.1 Describing standards

Taking the idea of the use of standards to heart, we describe each standard in a Dublin Core (DC) derived format. 9 out of the 15 DC elements are used in the descriptions.

These elements are:

Title	The name (or names) under which the standard is known. In most cases both the abbreviated and the full name is listed.
Creator	The name of the organisation or individual who originally created the standard.
Publisher	The name of the organisation that makes the standard publicly available.
Date	The date on which the standard was *originally* published.
Identifier	A number or other identifier under which standard is published or a URL which points to the definition of the standard.
Rights	Whether rights restrictions, e.g. patents, apply to the standard.
Description	A textual description explaining the standard and its usage.
Subject	Keywords that identify the nature of the standard.
Relation	Other standards that this standard relates to, and associated websites.

The descriptions are aimed at a general reader. More technical details for the majority of standards discussed can be found in various places on the Web.

The purpose of this section is to allow the reader to have an easy reference to the range of relevant standards in one place.

3.2 Information schemes (metadata)

Most of the standards listed below define descriptive metadata. They focus on recording information about resources: books; archives; museum objects; people, places; and organisations.

In addition SPECTRUM is also a procedural standard. This type of standard defines the activities and the information requirements (a type of administrative metadata) needed to manage a specific area of the cultural sector practise. The standards do not necessarily give guidance about its technical implementation. They can be seen as defining ‘good-practice’ in a specific field.

The descriptions here have been divided into those created for recording information about material from a particular cultural domain:

- Museum specific;
- Archive specific;
- Library specific;
- Historic environment specific;
- General heritage.

or for a particular purpose:

- Resource discovery;
- Document encoding.

EAD and TEI are also ***tagging*** standards for the encoding of documents. They were originally based on the text encoding standard SGML, but more recently have been 'updated' to use XML (both of these are described later).

3.2.1 Museum specific

CDWA

Title	CDWA
	Categories for the Description of works of Art
Creator	Art Information Task Force
Publisher	Getty Research Institute
Date	1990
Identifier	**http://www.getty.edu/research/institute/standards/cdwa/index.html**
Rights	Getty Research Institute.
Description	Describes the content of art databases by articulating a conceptual framework for describing and accessing information about objects and images. They identify vocabulary resources and descriptive practices that will make information residing in diverse systems both more compatible and more accessible. They also provide a framework to which existing art information systems can be mapped and upon which new systems can be developed.
Subject	documentation (museum)
Relation	**http://www.getty.edu/research/conducting_research/standards/cdwa/cdwalite.html** (CDWA Lite)

museumdat

Title	museumdat
Creator	Fachgruppe Dokumentation im Deutschen Museumsbund
	Institut für Museumsforschung SMB-PK
	Zuse-Institut Berlin
Publisher	Fachgruppe Dokumentation im Deutschen Museumsbund / Institut für Museumsforschung SMB-PK / Zuse-Institut Berlin
Date	2006-2007
Identifier	**http://museum.zib.de/museumdat/museumdat-v1.0.xsd**
Rights	Copyright FG Dokumentation im Deutschen Museumsbund / Institut für Museumsforschung SMB-PK /Zuse-Institut Berlin
Description	A harvesting format (XML schema) optimized for retrieval and publication, meant to deliver automatically core data to museum portals.
Subject	description (cultural object)
Relation	**http://museum.zib.de/museumdat/museumdat-v1.0-en.pdf** (documentation)
	http://www.museumdat.org/index.php?ln=de&t=home (German website)
	http://www.museumdat.org/index.php?ln=en (English website)

Object ID

Title	Object ID
Creator	Thornes, Robin (et al)
Publisher	J. Paul Getty Trust
Date	1999
Identifier	**http://www.object-id.com/guide/guide_index.html**
Rights	Copyright The J. Paul Getty Trust. All rights reserved
Description	Standard for describing cultural objects. Developed through the collaboration of the museum community, police and customs agencies, the art trade, insurance industry, and valuers of art and antiques.
Subject	description (cultural object)
Relation	**http://www.object-id.com/checklist/check_eng.html** (checklist)

SPECTRUM

Title	SPECTRUM
	SPECTRUM: The UK Museum Documentation Standard, 3rd Edition (Version 3.1)
Creator	McKenna, Gordon (ed)
	Patsatzi, Efthymia (ed)
Publisher	Collections Trust [MDA]
Date	2007
Identifier	1 900642 14 X (ISBN)
Rights	Copyright Collections Trust. All rights reserved.
	[Open Standard]
Description	Standard for the collections management documentation. Built around 21 procedures that commonly occur in museums. Supported by definitions of 'units of information' – the data needed to support the procedures. There are Dutch language versions for Flanders and the Netherlands. An XML schema is available.
Subject	documentation (museum)
Relation	**http://www.collectionstrust.org.uk/spectrum** (UK version)
	http://www.collectionstrust.org.uk/spectrum-nl (Netherlands version)
	http://www.collectionstrust.org.uk/spectrum-nl-be (Flanders version)
	http://www.collectionstrust.org.uk/schema (XML schema)

3.2.2 Archive specific

EAD

Title	EAD
	Encoded Archival Description
Creator	Encoded Archival Description Working Group of the Society of American Archivists
	Network Development and MARC Standards Office of the Library of Congress
Publisher	Society of American Archivists
Date	2002
Identifier	**ftp://ftp.loc.gov/pub/ead/ead.dtd** (DTD)
	http://www.loc.gov/ead/ead.xsd (W3C schema)
Rights	Copyright Society of American Archivists.
	[Open Standard]
Description	DTD and schema for the encoding archival finding aids. Also used to describe collections (collection description).
Subject	archive description
	collection description
	document encoding
Relation	**http://www.loc.gov/ead** (EAD website)

ISAD(G)

Title	ISAD(G)
	ISAD(G): General International Standard Archival Description, Second Edition
Creator	Committee on Descriptive Standards (ICA/CDS) (adopter)
Publisher	International Congress on Archives (ICA)
Date	2000
Identifier	0-9696035-5-X (ISBN)
	http://www.ica.org/sites/default/files/isad_g_2e.pdf
Rights	Copyright International Congress on Archives
Description	General rules for archival description that may be applied irrespective of the form or medium of the archival material. The rules accomplish these purposes by identifying and defining twenty-six (26) elements that may be combined to constitute the description of an archival entity.
Subject	archive description
Relation	**http://www.ica.org** (ica website)

ISAAR (CPF)

Title	ISAAR (CPF)
	ISAAR (CPF): International standard archival authority record for corporate bodies, persons and families, Second Edition
Creator	ICA Committee on Descriptive Standard (preparer)
Publisher	International Congress on Archives (ICA)
Date	2004
Identifier	2-9521932-2-3 (ISBN)
	http://www.ica.org/sites/default/files/ISAAR2EN.pdf
Rights	Copyright International Congress on Archives
Description	General rules for the establishment of archival authority records that describe the corporate bodies, persons, and families that may be named as creators in descriptions of archival documents.
Subject	archive description
Relation	**http://www.ica.org** (ica website)

3.2.3 Library specific

FRBR

Title	FRBR
	Functional Requirements for Bibliographic Records
Creator	IFLA Study Group on the Functional Requirements for Bibliographic Records International
Publisher	International Federation of Library Associations and Institutions (IFLA)
Date	1998
Identifier	ISBN 3-598-11382-X
Rights	Copyright International Federation of Library Associations and Institutions
Description	A conceptual entity-relationship model that relates user tasks of retrieval and access in online library catalogues and bibliographic databases from a user's perspective.
Subject	bibliographic description
Relation	**http://www.ifla.org/VII/s13/frbr/frbr.pdf** (Final report)

MAB2

Title	MAB2
	Maschinelles Austauschformat für Bibliotheken (Automated Library Exchange Format)
Creator	Deutsche Nationalbibliothek
Publisher	Deutsche Nationalbibliothek
Date	2001
Identifier	**http://www.d-nb.de/standardisierung/txt/titelmab.txt** [bibliographic data (MAB-TITEL)]
Rights	Deutsche Nationalbibliothek
Description	The machine exchange all data generated within a library environment (bibliographic, authority and local data).
Subject	bibliographic description
Relation	**http://www.d-nb.de/eng/standardisierung/formate/mab.htm** (German National Library MAB web page)

MARC

Title	MARC
	MAchine-Readable Cataloguing
	MARC 21 Concise Format for Bibliographic Data
Creator	Network Development and MARC Standards Office of the Library of Congress
Publisher	Library of Congress
Date	2002 (updated)
Identifier	**http://www.loc.gov/marc/bibliographic/ecbdhome.html**
Rights	[Open Standard]
Description	Standard for the representation and communication of bibliographic information in machine-readable form.
Subject	bibliographic description
Relation	**http://www.loc.gov/marc/authority/ecadhome.html** (authority information)
	http://www.loc.gov/marc/holdings/echdhome.html (holdings data)
	http://www.loc.gov/marc/classification/eccdhome.html (classification data)
	http://www.loc.gov/marc/community/eccihome.html (community data)
	ISO 2709

Information and documentation -- Format for Information Exchange

Title	Information and documentation -- Format for Information Exchange
Creator	International Organization for Standardization (ISO)
Publisher	International Organization for Standardization (ISO)
Date	1996
Identifier	ISO 2709:1996
Rights	[Open Standard]
Description	Specifies the requirements for a generalized exchange format suitable for bibliographic descriptions. Describes a framework for communications between data processing systems. Replaces the second edition.
Subject	bibliographic description
Relation	MARC

METS

Title	METS
	Metadata Encoding and Transmission Standard
Creator	McDonough, Jerome (et al)
Publisher	Digital Library Federation
Date	2007 (Version 1.7)
Identifier	**http://www.loc.gov/standards/mets/mets.xsd**
Rights	Copyright Digital Library Federation
Description	XML schema is a standard for encoding descriptive, administrative, and structural metadata regarding objects within a digital library.
Subject	digital library
Relation	**http://www.loc.gov/standards/mets/mets-schemadocs.html** (METS website)

MODS

Title	MODS
	Metadata Object Description Schema
Creator	Library of Congress' Network Development
	MARC Standards Office
Publisher	Library of Congress
Date	2008 (version 3.3)
Identifier	**http://www.loc.gov/standards/mods/v3/mods-3-3.xsd**
Rights	[?]
Description	XML schema for a bibliographic element set that may be used for a variety of purposes, and particularly for library applications
Subject	bibliographic description
Relation	**http://www.loc.gov/standards/mods/** (website)

3.2.4 Historic environment specific

MIDAS

Title	MIDAS
	MIDAS Heritage
Creator	English Heritage
	Forum on Information Standards in Heritage (FISH)
Publisher	English Heritage
Date	2008
Identifier	**http://www.english-heritage.org.uk/upload/pdf/MIDAS_Heritage_Part_One.pdf**
	http://www.english-heritage.org.uk/upload/pdf/MIDAS_Heritage_Part_Two.pdf
	http://www.english-heritage.org.uk/upload/pdf/MIDAS_Heritage_Part_Three.pdf
Rights	Copyright Forum on Information Standards in Heritage (FISH)
Description	The UK data standard for information about the historic environment. It states what information should be recorded to support effective sharing of the knowledge of the historic environment, and the long-term preservation of those records. It covers: the individual assets that form the historic environment (buildings, archaeological sites, shipwrecks, areas of interest and artefacts); the work that is undertaken to understand, protect and manage change to those assets.
Subject	documentation (historic environment)
Relation	**http://www.fish-forum.info** (FISH website)
Relation	**http://www.heritage-standards.org.uk** (FISH Interoperability Toolkit)

3.2.5 General heritage

These standards are not 'tied' to any of the domains but can be used by any of them.

CIDOC-CRM

Title	CIDOC-CRM
	CIDOC Conceptual Reference Model
Creator	CIDOC Documentation Standards Working Group
Publisher	International Organization for Standardization (ISO)
Date	2006
Identifier	ISO 21127:2006.
Rights	[Open Standard]
Description	A conceptual object-oriented model that provides the extensible ontology for concepts and information in cultural heritage and museum documentation.
Subject	documentation (museum)
Relation	**http://www.iso.org** (ISO website)
	http://cidoc.ics.forth.gr (CRM website)

VRA

Title	VRA
	VRA Core (Version 4.0)
Creator	Visual Resources Association's Data Standards Committee
Publisher	Visual Resources Association
Date	2007
Identifier	**http://www.vraweb.org/projects/vracore4/VRA_Core4_Element_Description.pdf**
Rights	Copyright Visual Resources Association [?]
Description	A metadata element set (units of information such as title, location, date, etc.), as well as an initial blueprint for how those elements can be hierarchically structured. The element set provides a categorical organization for the description of works of visual culture as well as the images that document them.
Subject	visual culture
Relation	**http://www.vraweb.org/projects/vracore4/index.html** (website)
	http://www.vraweb.org/projects/vracore4/vra-4.0.xsd (XML schema)

3.2.6 Resource discovery

Dublin Core

Title	Dublin Core
	The Dublin Core Element Set Version 1.1
Creator	Dublin Core Metadata Initiative
Publisher	Dublin Core Metadata Initiative
Date	1999
Identifier	**http://dublincore.org/documents/1999/07/02/dces/**
Rights	[Open Standard]
Description	The Dublin Core is a simple metadata element set intended to facilitate discovery of electronic resources. Elements can be grouped into those having data on: Content – Coverage, Description, Type, Relation, Source, Subject, Title; Intellectual Property – Contributor, Creator, Publisher, Rights; Instantiation – Date, Format, Identifier, Language. Its use has been mandated by several governments in Europe (e.g. UK) and throughout the world (e.g. Australia).
Subject	resource discovery

3.2.7 Document encoding

TEI

Title	TEI
	TEI P5: Guidelines for Electronic Text Encoding and Interchange
Creator	Burnard, Lou (ed)
	Bauman, Syd (ed)
Publisher	Text Encoding Initiative Consortium
Date	2007
Identifier	**http://www.tei-c.org/P5X/**
Rights	Copyright TEI Consortium 2007 Licensed under the GPL. Copying and redistribution is permitted and encouraged.
	[Open Standard]
Description	Defines a set of tags (markers) for inserting into the electronic form of a document (a text) in order to identify the structure and other features of that document. The aim of these tags is to allow the processing of the text by computer. They are aimed at use with texts in any 'natural' language, of any date and of any genre. This version is XML-compatible.
Subject	document encoding
Relation	XML
	SGML
	http://www.tei-c.org (Text Encoding Initiative Consortium website)

3.3 Multimedia formats

3.3.1 Text

Text encoding standards deal with how texts are stored in computer systems. They vary from industry standards (*de facto*) standards, such as Microsoft Word, to World Wide Web Consortium (W3C) endorsed standards, such as XML.

DjVu

Title	DjVu
Creator	AT&T Labs
Publisher	LizardTech Incorporated
Date	1996 onwards
Identifier	**http://djvu.org/docs/DjVu3Spec.djvu** [version 3]
Rights	[Open Standard]
Description	Designed mainly to store scanned images, especially those containing text and line drawings.
Subject	document rendering
	document structure
Relation	**http://djvu.org** [DjVu website]

HTML

Title	HTML
	HyperText Markup Language
Creator	Berners-Lee, T
Publisher	World Wide Web Consortium (W3C)
Date	1989 onwards
Identifier	**http://www.w3.org/TR/html4/** [version 4.01]
Rights	[Open Standard]
Description	The Hypertext Markup Language was designed by Tim Berners Lee to create a semantic network of documents. The markup language was based on SGML (an SGML application). The emphasis of HTML is on rendering (display) of documents rather than on representing document structure. The HTML standard is maintained by the World Wide Web consortium. The Cascading Style Sheet standard is an addition to HTML to facilitate the lay-out and design of web pages. Version 4 of HTML uses Unicode as its standard character set.

Subject	document rendering
Relation	SGML
	XML
	XHTML
	Unicode

PDF

Title	PDF
	Portable Document Format
Creator	Adobe Systems Incorporated
Publisher	Adobe Systems Incorporated
Date	1999
Identifier	[not available]
Rights	Copyright Adobe Systems Incorporated. All rights reserved.
Description	A *de facto* standard for documents. The portable document format was designed by Adobe as a device independent way to represent document structure and lay-out. It is based on the Postscript page rendering standard. The pdf format is widely used to publish documents on the World Wide Web and CD-ROM.
Subject	document rendering
	document structure
Relation	Postscript
	RTF

RTF

Title	RTF
	Rich Text Format
Creator	Microsoft Corporation
Publisher	Microsoft Corporation
Date	1999
Identifier	**http://msdn.microsoft.com/en-us/library/aa140277.aspx** [Version 6.1]

Rights	Copyright Microsoft Corporation.
Description	The RTF Specification provides a format for text and graphics interchange that can be used with different output devices, operating environments, and operating systems. RTF uses the American National Standards Institute (ANSI), PC-8, Macintosh, or IBM PC character set to control the representation and formatting of a document, both on the screen and in print. With the RTF Specification, documents created under different operating systems and with different software applications can be transferred between those operating systems and applications.
Subject	document rendering
	document structure
Relation	PDF

SGML

Title	SGML
	Standard Generalized Markup Language
Creator	Goldfarb, Charles F
Publisher	International Organization for Standardization (ISO)
Date	1986
Identifier	ISO 8879:1986
Rights	[Open Standard]
Description	SGML is the International Standard (ISO 8879) language for structured data and document representation, the basis of HTML and XML. In the cultural sector SGML itself is not widely in use. An early project was the CIMI CHIO demonstrator project. Later projects often use XML, which originally started as a simplified SGML.
Subject	document structure
	document encoding
Relation	XML
	HTML
	http://www.iso.org (ISO website)

Word

Title	Microsoft Word Document Format
Creator	Microsoft Corporation
Publisher	Microsoft Corporation
Date	1983 onwards
Identifier	[none available]
Rights	Proprietary format of Microsoft.
Description	A *de facto* standard for documents. The .doc format was designed by Microsoft for their Word program and has gone through several version changes. The format is widely in use for exchange of documents. The specification of the format has not been made public.
Subject	document rendering
	document structure

XML

Title	XML
	eXtensible Markup Language
Creator	World Wide Web Consortium (W3C)
Publisher	World Wide Web Consortium (W3C)
Date	1996 onwards
Identifier	**http://www.w3.org/TR/xhtml1/** [revised 1 August 2002]
Rights	[Open Standard]
Description	XML started as 'SGML light', to overcome some of its complexities and terseness. Soon if overhauled its ancestor in popularity and is now the most widely used structuring language for electronic documents. XML structures a document by 'tagging' texts. The tags can be freely defined, but can be controlled by a Document Type Definition (DTD) or an XML-schema. XML uses the Unicode character set, so that it is very usable in multi-lingual and international applications. Several XML derivates have been standardized, such as XSLT (eXtensible Style Language and Transformation) and the xPath query syntax.
Subject	document structure
	document encoding

Relation	SGML
	HTML
	Unicode

3.3.2 Image

Still image encoding deals with how images are represented in digital form. In this section we are dealing with 'raster images' rather than 'vector images'. Raster images are usually 'photographic' images, where the image is represented by a number of horizontal and a number of vertical picture elements (pixels). Each element has its own colour representation. Raster graphics are produced by scanners and digital cameras. Eventually the individual pixels become visible if raster images are enlarged.

BMP

Title	BMP
	BitMap
Creator	Microsoft Corporation
Publisher	Microsoft Corporation
Date	1987
Identifier	[not available]
Rights	Copyright Microsoft Corporation
Description	The bmp image format is the Microsoft Windows standard format. It holds black and white-, 16-colour, 256-colour and Truecolor (24 bits) images. The palletized 16-colour and 256-colour images may be compressed via run length encoding.
Subject	image format
	raster graphics

DjVu

Title	DjVu
Creator	AT&T Labs
Publisher	Lizardtech
Date	1996 onwards
Identifier	**http://djvu.org/docs/DjVu3Spec.djvu** [a DjVu plug-in is needed]
Rights	[Open Standard]

Description	Designed mainly to store scanned images, especially those containing text and line drawings. It offers advanced compression technology.
Subject	document rendering
	document structure
Relation	PDF
	http://djvu.org [DjVu website]

GIF

Title	GIF
	Graphical Interchange Format
Creator	CompuServe Interactive Services Incorporated
Publisher	CompuServe Interactive Services Incorporated
Date	1987
Identifier	[not available]
Rights	Patent on LZW compression by Unisys.
Description	GIF was created by Compuserve for their online service, but the specifications were made publicly available. GIFs can hold multiple bitmaps of up to 256 colours, each using LZW compressed raster data to minimize file sizes. The format uses Lempel Ziv Welch (LZW) compression that has been patented by Unisys.
Subject	image format
	raster graphics

JPG

Title	JPG
	JPEG
Creator	Joint Photographic Expert Group
	Independent JPEG Group
Publisher	International Organization for Standardization (ISO)
Date	1990
Identifier	ISO/IEC 10918-1:1994

Rights	[Open Standard]
Description	JPEG is a still image compression algorithm based on the fact that the human eye cannot detect subtle differences in colour or contrast. JPEG is a lossy algorithm: the higher the compression factor the more information gets lost. An image that has been compressed using the JPEG algorithm cannot be completely reconstructed. The file format for JPEG compressed images is called JFIF. This file format is what people generally mean when they refer to "JPEG".
Subject	image format
	raster graphics
Relation	**http://www.iso.org** (ISO website)

PNG

Title	PNG
	Portable Network Graphics
Creator	World Wide Web Consortium (W3C)
Publisher	International Organization for Standardization (ISO)
Date	2003
Identifier	ISO/IEC 15948:2003 (E)
Rights	[Open Standard]
Description	PNG is an extensible format for the lossless, portable, well-compressed storage of raster images. PNG provides a patent-free replacement for GIF and can also replace many common uses of TIFF. Indexed-colour, grayscale, and Truecolor images are supported, plus an optional alpha channel for transparency. Sample depths range from 1 to 32 bits.
Subject	image format
	raster graphics
Relation	**http://www.w3.org/TR/PNG/**
	http://www.iso.org (ISO website)

TIFF

Title	TIFF
	Tagged Image File Format

Creator	Aldus Corp
Publisher	Adobe Systems Inc.
Date	1992
Identifier	**http://partners.adobe.com/public/developer/en/tiff/TIFF6.pdf** [Version 6.0]
Rights	[Open Standard]
Description	TIFF provides a general purpose data format and is compatible with a wide range of scanners and image-processing applications. It is device independent and is used in most operating environments. This non-proprietary industry standard for data communication has been implemented by most scanner manufacturers and desktop publishing applications.
Subject	image format
	raster graphics

3.3.3 Audio

Digitisation of sound is achieved through a sound sampling process. During sampling the analogue signal strength is digitally measured at given time intervals. The obtained signal values are then stored in compressed or uncompressed form. The open standard for the use of compressed sound in this area is MP3. The proprietary standards tend to offer better performance, in terms of file size (speed of transmission) and quality of sound.

AIFF

Title	AIFF
	Audio Interchange File Format
Creator	Apple Computer Incorporated
	Electronic Arts
Publisher	Apple Computer Incorporated
Date	1988-1989
Identifier	**http://www-mmsp.ece.mcgill.ca/Documents/AudioFormats/AIFF/Docs/AIFF-1.3.pdf** [Version 1.3]
Rights	Apple Computer Incorporated [?]
Description	A non-compressed audio format most widely found on Apple Macintosh computers. Lossless, it is commonly used with professional-level audio and video software and systems.
Subject	sound format

MP3

Title	MP3
	MPEG Layer 3
	Coding of Moving Pictures and Associated Audio for Digital Storage Media
Creator	ITU-T (International Telecommunication Union Telecommunication Standardization Sector)
	Moving Pictures Expert Group (ISO/IEC JTC1/SC29 WG11)
Publisher	International Organization for Standardization (ISO)
Date	1993 onwards
Identifier	ISO/IEC 11172:1993, Part 3: Audio
	ISO/IEC 13818, Part 3: Audio
	ISO/IEC 14496, Part 3: Audio (Amendment 1: Audio extensions)
Rights	[Open Standard]
Description	An audio compression format common on the Internet. Part of the MPEG standards, it can take larger audio recordings and shrink them down to a fraction of their size while losing little if any fidelity of the sound.
Subject	sound format
Relation	MPEG-1; MPEG-2; MPEG-3
	http://www.iso.org (ISO website)

WAV

Title	WAV
	RIFF
	Resource Interchange Format
Creator	IBM
	Microsoft Corporation
Publisher	Microsoft Corporation
Date	1991
Identifier	**http://partners.adobe.com/asn/developer/pdfs/tn/TIFF6.pdf**
Rights	[?]

Description	Contain sampled audio. The sound information itself it stored in a container using the Resource Interchange File Format. The RIFF file stores data in chunks, including metadata. A WAV file can contain sound clips with different sample rates, number of channels etc.
Subject	sound format
Relation	AVI

WMA

Title	WMA
	Windows Media Audio
Creator	Microsoft Corporation
Publisher	Microsoft Corporation
Date	[?]
Identifier	[not available]
Rights	Copyright Microsoft Corporation
Description	Microsoft's proprietary competition to MP3. Optimised to deliver audio over the Web, particularly streaming, and using Microsoft products. Has integrated rights management, the advantages of a smaller file size and therefore transfer rates over other formats, including MP3. In addition the sound quality is said to be better.
Subject	sound format
Relation	WMV

RealAudio

Title	RealAudio
Creator	RealNetworks Incorporated
Publisher	RealNetworks Incorporated
Date	[?]
Identifier	[not available]
Rights	Copyright Real Networks
Description	Format optimised for delivery of audio over the Web.
Subject	sound format

Relation	RealVideo
Relation	RealMedia

AU

Title	AU
Creator	Sun Microsystems Incorporated
Publisher	Sun Microsystems Incorporated
Date	[?]
Identifier	[not available]
Rights	Copyright Sun Microsystems Incorporated
Description	A sound format for Unix systems. It is the 'standard' audio file format for Java.
Subject	sound format

3.3.4 Video

Digitisation of video adds the time dimension to the digitisation of still images. In principle the process is similar to producing raster images, but then produced in a very fast succession of images. The number of images per second is called the frame rate.

The quality if digitised video is defined by three factors: resolution, colour depth and frame rate. Digitised video can produce large quantities of data. Because of this compression is very important.

Compression relies on the fact that only small portions of the images tend to change between successive frames. With regards to encoding standards, the situation is similar to that with audio encoding, with the MPEG family of standards being open, and a set of proprietary standards, particularly on offer as well.

AVI

Title	AVI
	Audio Video Interleave
Creator	Microsoft Corporation (for Intel)
Publisher	Microsoft Corporation
Date	[?]
Identifier	[not available]

Rights	Copyright Microsoft Corporation
Description	The earliest video format for PCs. The size of image that can be displayed is dependent on the hardware being used. As compression and decompression functionality is part of Microsoft's *Video for Windows* package, there is support for this format in a range of hardware and software configurations. File sizes are high and therefore this format ill-suited for delivery over the Internet.
Subject	video format

FLV (Flash Video Format)

Title	FLV
	Flash Video Format
Creator	Macromedia (now Adobe)
Publisher	Adobe Systems Incorporated
Date	2002 onwards
Identifier	**http://www.adobe.com/devnet/flv/pdf/video_file_format_spec_v10.pdf** [Version 10]
Rights	Copyright Adobe Systems Incorporated
Description	Used for the delivery of video over the Internet. It is viewed either using separate 'player' software or using a web browser 'plug-in'. It is becoming the *de facto* standard of video embedded on web pages.
Subject	video format

MOV (Quicktime)

Title	QuickTime
Creator	Apple Computer Incorporated
Publisher	Apple Computer Incorporated
Date	1991 onwards
Identifier	[not available]
Rights	Copyright Apple Computer Incorporated
Description	Apple's proprietary video (and virtual reality) format and system. Built into the Mac's operating system, can be viewed on a PC by using a free to download player. Some of its technology was used in the development of MPEG-4

Subject	video format
Relation	Quicktime VR
	MPEG-4
	http://www.apple.com (Apple website)

MP4

Title	MPEG-4
	Very-low bitrate audio-visual coding
Creator	Moving Pictures Expert Group (ISO/IEC JTC1/SC29 WG11)
Publisher	International Organization for Standardization (ISO)
Date	1999 (version 1)
	2001 (version 2)
Identifier	ISO/IEC 14496 (Parts 1 to 10)
Rights	[Open Standard]
Description	A high compression version of MPEG-2. Version 2 has data protection and IPR.
Subject	video format
Relation	MPEG-2
	MP3
	QuickTime [used in development]
	http://www.iso.org (ISO website)

MPG

Title	MPEG-1
	Coding of Moving Pictures and Associated Audio for Digital Storage Media
Creator	Moving Pictures Expert Group (ISO/IEC JTC1/SC29 WG11)
Publisher	International Organization for Standardization (ISO)
Date	1993
Identifier	ISO/IEC 11172:1993 (Parts 1 to 5)
Rights	[Open Standard]
Description	Designed to be the equivalent of a video recorder format in the digital world, and to make use of the early model CD-ROMs as a delivery method. Standard television quality images, with a compression ratio of 50 to 1.
Subject	video format
Relation	MP3
	http://www.iso.org (ISO website)

Title	MPEG-2
	Coding of Moving Pictures and Associated Audio for Digital Storage Media
Creator	ITU-T (International Telecommunication Union Telecommunication Standardization Sector)
	Moving Pictures Expert Group (ISO/IEC JTC1/SC29 WG11)
Publisher	International Organization for Standardization (ISO)
Date	2000
Identifier	ISO/IEC 13818:2000 (Parts 1 to 11)
Rights	[Open Standard]
Description	An improvement to MPEG-1, with encoding techniques to allow for higher quality video and audio, and delivery from DVDs. High definition television quality images, with a compression ratio of 150 to 1.
Subject	video format
Relation	MPEG-1
	MP3
	http://www.iso.org (ISO website)

RM (Real Media)

Title	RM
	Real Media
Creator	RealNetworks Incorporated
Publisher	RealNetworks Incorporated
Date	[?]
Identifier	[not available]
Rights	Copyright Real Networks
Description	Format optimised for delivery of audio over the Web.
Subject	multimedia
Relation	RealAudio
Relation	RealVideo

SWF (Flash Movie)

Title	SWF
	Small Web Format
	Flash Movie
Creator	Macromedia (now Adobe)
Publisher	Adobe Systems Incorporated
Date	1996 onwards
Identifier	**http://www.adobe.com/devnet/swf/pdf/swf_file_format_spec_v10.pdf** [version 10]
Rights	Copyright Adobe Systems Incorporated
Description	Originally just for the delivery of animated vector graphics it is now used for interactive audio and video. It can be viewed using a standalone player or via a web browser plug in.
Subject	animated vector graphics
	Interactivity

WMV (Windows Media Video)

Title	WMV
	Windows Media Video
Creator	Microsoft Corporation
Publisher	Microsoft Corporation
Date	[?]
Identifier	[not available]
Rights	Copyright Microsoft Corporation
Description	Microsoft's proprietary competition to MPEG-4. Optimised to deliver video over the Web, particularly streaming, and using Microsoft products.
Subject	video format
Relation	WMA

ASF

Title	ASF
	Advanced Streaming Format
Creator	Microsoft Corporation
	RealNetworks Incorporated
Publisher	Microsoft Corporation
Date	2004
Identifier	**http://www.microsoft.com/windows/windowsmedia/forpros/format/asfspec.aspx** [Revision 01.20.03]
Rights	Copyright Microsoft Corporation. All rights reserved.
Description	A proprietary format, designed to deliver, compressed, streaming video / audio content over the Internet.
Subject	video format

3.3.5 Virtual reality

VRML97

Title	VRML97
	Virtual Reality Modelling Language
Creator	VRML Consortium Incorporated
	Joint Technical Committee ISO/IEC JTC 1, Information technology, Subcommittee 24, Computer graphics and image processing
Publisher	International Organization for Standardization (ISO)
Date	1997
Identifier	ISO/IEC 14772-1:1997
Rights	[Open Standard]
Description	A format for describing 3D objects and worlds. These are designed to be interactive and accessible over the Internet as well as in other scenarios (e.g. standalone computers). Is capable of representing static or dynamic 3D and allowing links to other multimedia 'object' such as text, still images, audio and video.
Subject	virtual reality
Relation	X3D
	http://www.web3d.org (Web3D Consortium website)
	http://www.iso.org (ISO website)

X3D / Extensible 3D

Title	X3D
	Extensible 3D
Creator	Web3D Consortium
Publisher	International Organization for Standardization (ISO) [in process]
Date	2007
Identifier	ISO/IEC FDIS 19775-1.2:2008
Rights	[Open Standard]
Description	An XML-based format expressing the functionality of VRM97. Currently being developed as an ISO standard.
Subject	virtual reality

Relation	VRML97
	XML
	http://www.web3d.org (Web3D Consortium website)
	http://www.iso.org (ISO website)

QuickTime VR

Title	QuickTime VR
Creator	Apple Computer Incorporated
Publisher	Apple Computer Incorporated
Date	1995 onwards
Identifier	[not available]
Rights	Copyright Apple Computer Incorporated
Description	Apple's proprietary virtual reality format and system for creation of content. Built into the Mac's operating system, can be viewed on a PC by using a free to download player. Part of the QuickTime system, it 'stitches' individual photographs together to create panoramas, 3-D views of objects, and allows the linking of them into 'scenes'.
Subject	virtual reality
	panoramas
Relation	QuickTime
	http://www.apple.com (Apple website)

3.3.6 Vector graphics

EPS

Title	EPS
	Encapsulated Postscript
Creator	Adobe Systems Inc.
Publisher	Adobe Systems Inc.
Date	1992
Identifier	**http://partners.adobe.com/public/developer/en/ps/5002.EPSF_Spec.pdf** [Version 3.0]
Rights	[Open Standard]
Description	Although strictly speaking EPS is not an image format is often used to represent line drawings. EPS is based on the PostScript language, a page layout language often used in printers. The EPS version allows PostScript encoded layouts to be "encapsulated" in other documents.
Subject	page layout language
	vector graphics

SVG

Title	SVG
	Scalable Vector Graphics
Creator	World Wide Web Consortium (W3C)
Publisher	World Wide Web Consortium (W3C)
Date	2003
Identifier	**http://www.w3.org/TR/SVG/index.html** [Version 1.1]
Rights	[Open Standard]
Description	SVG is a language for describing two-dimensional graphics in XML.SVG allows for three types of graphic objects: vector graphic shapes (e.g., paths consisting of straight lines and curves), images and text. Graphical objects can be grouped, styled, transformed and composited into previously rendered objects. Although primarily intended for vector applications SVG documents can also contain bitmap images.
Subject	vector graphics
Relation	XML

3.4 Other technical standards

These deal with various areas:

- ***Search and retrieval*** – the intricacies of formulating a query for a database system and obtaining (and handling) the search results;
- ***Transmission*** – to achieve the end-to-end delivery of digital data. They can be low-level (such as TCP/IP) or be more application specific, such as http. Today TCP/IP is the predominant low level protocol. Application specific protocols are constructed 'on-top-of' TCP/IP;
- ***Character encoding*** – defining how separate characters in text are stored in a computer system.

3.4.1 Search and retrieval

OAI-PMH

Title	OAI-PMH
	Open Archives Initiative Protocol for Metadata Harvesting (Version 2.0)
Creator	Sompel, Herbert van de
	Lagoze, Carl
Publisher	Open Archives Initiative
Date	2002
Identifier	**http://www.openarchives.org/OAI/openarchivesprotocol.html**
Rights	[Open Standard]
Description	The Open Archives Initiative metadata harvesting protocol provides access for harvesting programs to data stored in databases or repositories that cannot be harvested using 'standard' http/html parsing. The protocol is based on http requests and responds in the form of XML. Different record syntaxes can be used, but Dublin Core support is mandatory.
Subject	harvesting protocol
Relation	XML
	Dublin Core

SQL

Title	SQL
	Structured Query Language
Creator	International Organization for Standardization (ISO)
Publisher	International Organization for Standardization (ISO)
Date	1987
Identifier	ISO 9075
Rights	[Open Standard]
Description	SQL defines a query language for relational databases. It was developed by IBM during the 1970's. SQL went through a standardisation process during the 1980's. The 2nd version of SQL (SQL2 was standardised in1992). The syntax is based on operations on two-dimensional tables which form the basis for relational database systems.
Subject	query language
	relational databases
Relation	ODBC
	http://www.iso.org (ISO website)

Z39.50

Title	Z39.50
	Information and documentation -- Information retrieval (Z39.50) -- Application service definition and protocol specification
Creator	ANSI/NISO
Publisher	International Organization for Standardization (ISO)
Date	1988
Identifier	ISO 23950:1998
Rights	[Open Standard]
Description	The Z39.50 protocol is protocol to implement search and retrieval client-server applications. Queries are expressed in Reversed Polish Notation (RPN) form and records can be returned in different formats, including MARC (Machine Readable Catalogue) format. The search component deals with the construction and execution of a query, the retrieval component of the standard deals with handling the search results.
Subject	search and retrieval protocol

Relation	MARC
	http://www.iso.org (ISO website)

3.4.2 Transmission

TCP/IP

Title	TCP/IP
	Transmission Control Protocol/Internet Protocol
Creator	Internet Engineering Task Force
Publisher	World Wide Web Consortium (W3C)
Date	1981
Identifier	RFC793
	RFC1122
Rights	[Open Standard]
Description	The Transport Control Protocol (TCP) and Internet Protocol (IP) go hand in hand and form the basis of all data transport over the Internet. The IP protocol provides a basic 'datagram' service. No guarantees are built in regarding the correct delivery of the data. IP is a so-called connectionless service. TCP runs on top of IP to provide error free, guaranteed-delivery connections. TCP is (unlike IP) on connection oriented protocol.
Subject	Internet
	data transmission
Relation	HTTP
	FTP

HTTP

Title	HTTP
	HyperText Transfer Protocol
Creator	Berners-Lee, Tim
Publisher	World Wide Web Consortium (W3C)
Date	1991
Identifier	**http://www.w3.org/Protocols/**
Rights	[Open Standard]

Description	The hypertext transfer protocol runs 'on-top-of' TCP/IP and is intended for the implementation of requesting (hypertext) documents over an Internet connection. A set of parameters can be passed within an http request, making it useable for other high level protocols, such as the OAI protocol.
Subject	hypertext transfer
Relation	TCP/IP
	OAI

FTP

Title	FTP
	File Transfer Protocol
Creator	Neigus, Nancy J.
Publisher	Internet Engineering Task Force
Date	1973
Identifier	**http://www.ietf.org/rfc/rfc542.txt**
Rights	[Open Standard]
Description	The FTP protocol is a machine / operating system independent protocol for the transfer of files. Its origins are from the beginning of the Internet and the FTP protocol can be considered one of the foundations of the net.
Subject	file transfer
Relation	TCP/IP

3.4.3 Character encoding

ASCII / American Standard Code for Information Interchange

Title	ASCII
	American Standard Code for Information Interchange
Creator	ANSI
	American National Standards Institute
Publisher	ANSI
Date	1967
Identifier	[?]
Rights	[Open Standard]
Description	A 7-bit code to represent characters, such as letters and digits in computer systems. The original ASCII standard was created in 1963, but was replaced by its final version in 1967. The ASCII character set contains 128 different characters of which 95 are 'printable' and 33 are 'control characters'
Subject	character encoding
Relation	ISO 8859-1
	Unicode

ISO 8859-1 / ISO Latin 1

Title	ISO 8859-1
	ISO Latin 1
Creator	International Organisation for Standardization (ISO)
Publisher	International Organization for Standardization (ISO)
Date	1998
Identifier	ISO-8859-1
	ECMA-94
Rights	[Open Standard]
Description	For the representation of European languages the 95 printable characters from the ASCII character set were not sufficient. To solve this problem 8 bit versions were created notably by the European Computer Manufacturers Association (ECMA-8) and IBM. IBM introduced different *code pages* for the different languages. The 8-bit ECMA standard was later adopted by the International Organization for Standardization (ISO) under the registration

	ISO-8859-1.
Subject	character encoding
Relation	ASCII
	Unicode
	http://www.iso.org (ISO website)

Unicode

Title	Unicode
Creator	Unicode Incorporated
Publisher	International Organization for Standardization (ISO)
Date	1992
Identifier	ISO/IEC 10646
	ECMA-94
Rights	[Open Standard]
Description	A 16-bit code to represents characters, such as letters and digits in computer systems. The Unicode standard was created to overcome the limitations of 8 bit character sets and to form one universally usable encoding scheme for characters from the Western languages, but also including non-Western scripts, such as Chinese, Arabic, Cyrillic and Hebrew. Version 3.0 of Unicode defines 49,194 characters. Different encoding schemes exist for Unicode including the widely used variable length UTF-8 encoding. Unicode is the default XML character set.
Subject	character encoding
	non-Western scripts
Relation	ASCII
	XML
	http://www.iso.org (ISO website)

4. The ATHENA standards survey

4.1 How the survey was carried out

The standards survey in the previous section gave an overview of the wide range standards that may be used in the full range of scenarios in museums in Europe. This informative role of the deliverable was thought to be of use to the ATHENA community. However the aim of the ATHENA project is to interface as closely with the requirements of Europeana as whole.

The survey questions were based on existing survey that Europeana had used when it surveyed potential content before its November 2008 launch. This included questions about a range of standards and other information which Europeana 'central' thinks is vital for the smooth operation of the Europeana portal as a whole. ATHENA was happy to accede to Europeana's request to employ a similar survey for our work.

Additional sections were added to obtain information about:

- MICHAEL collection descriptions;
- Intellectual Property practise;
- Terminology use;
- Use of commercial collections management systems;
- Aggregators other than Europeana.

The survey was divided into 10 sections:

- Content provider information;
- Collection description;
- Digital object metadata;
- Information scheme(s) (metadata);
- Intellectual Property Rights (including copyright);
- Geographic name terminology and co-ordinate standards;
- Date format and time period terminology;
- Subject terminology;
- Person and organisation terminology;
- Contributing to Europeana.

The survey was created in two versions:

- ***RTF document*** – which allowed the use by project partners and/or distribution of the questions to content providers before using the:
- ***On-line system*** – where project partners entered the data they had collected and allow the easier collection of data and analysis.

The rest of this section details the results of the survey.

4.2 Provider types

Here are the figures for the types of organisations that are represented in the survey:

Organisation type	Number of organisations	(%)
Museum	50	(37.6)
Library	4	(3.0)
Archive	13	(9.8)
Sound archive	2	(1.5)
Aggregator	6	(4.5)
Other	58	(43.5)

When the amount of content is looked at the following figures result:

Collection type	Amount of content	(%)
Museum	1,599,503	(42.1)
Library	518,685	(13.6)
Archive	722,247	(19.0)
Sound archive	50,000	(1.3)
Aggregation	29,226	(0.7)
Other	653,547	(17.2)
Mixed*	229,750	(6.0)

(* Mixed collections are entries in the survey where multiple types are in the same collection.)

These figures show that the content in the ATHENA project cover all of the cultural domains, even if museums and museum collections are the significant feature. Also it should be noted that museums often hold archival and library collections in addition to purely museum collections.

Details of the 'Other' collections can be found in Appendix II. For example Greece is supplying content for a large number of regional archaeology units.

4.3 Collection content

The information analysed in this section was obtained from questions 1-5 and 18-22 of the Survey. The full details of collection content surveyed can be found in Appendix II at the end of this deliverable.

4.3.1 Themes

This table shows which content themes are found in the collections in the ATHENA survey. Many collections have more than one theme. It is difficult to give accurate content numbers to the themes because of the mixed nature of many collections.

Theme	Number of collections
Archaeology	56
Fine art	40
Local history	19
Religion	17
Decorative art	8
Archives	7
Industry	6
Literature	5
Natural science	4
World cultures	4
Books	3
Fashion	3
Newspapers	3
Textiles	3
Architecture	2
Costume	2
Magazines	2
Manuscripts	2
Maps	2

The table excludes themes that appear in only one collection and seven 'all themes' collections, for example the collections of the National Museum of Finland with 50,000 pieces of content. The top three themes are probably typical for on-line collections as a whole, particularly those from museums.

4.3.2 Time periods

Centuries	Number of collections
20th and 21st	61
19th	68
18th	44
17th	38
16th	43
15th	42
14th	37
13th	34
12th	32
11th	32
[Earlier]	71

Again these results could have been expected, reflecting the availability and survivability of material. The large number of collections before the 11th century is mainly coming from archaeology units in Greece. However, even if one were to remove these collections from the survey the early content is still significant.

4.3.3 Language

Looking at the situation in each country where percentages for content languages are given for a collection:

Country	Major languages: Max-Min %	Other languages: Max-Min %
Belgium	Dutch: 100-25 French:100-65	English: 5 German: 5
Estonia	Estonian: 85	English: 5 German: 5 Russian: 5
Finland	Finnish: 100-60 Swedish: 60-40	English [?] Latin [?]
France	French: 100	[some other and regional languages]
Germany	German: 100	
Greece	Greek: 100-90 English: 100-2 French: 100-1	German: 5 Hebrew: 1 Latin: 3 Ottoman Turkish: 2
Hungary	Hungarian: 100	
Israel	English: 60 German: 90 Hebrew: 40-10	Aramaic: [?] French: [?] Latin: [?]
Italy	Italian: 100-70	'Other': 30
Romania	Romanian: 100-90 Latin: 95-94	French 10-2 German: 5-2 Hungarian: 2
Slovenia	Slovenian: 100 English: 100	
Sweden	Swedish: 100-60	English: [?] German: [?] French: [?] Spanish: [?]
United Kingdom	English: 100	

The major languages reflect the historical environment under which content was created rather than a 'mission' to supply content in multiple languages to current users. This explains:

- ***Belgium*** – The bilingual nature of the country;
- ***Finland*** – There is a large Swedish-speaking minority and the numbers are due to a collection of newspapers;

- ***Greece*** – The high figures for English and French are from only one multilingual collection;
- ***Israel*** – Much of the content is archival material written by German speakers. English was the language of administration between the two world wars
- ***Romania*** – Latin was used extensively in mediaeval times;
- ***Slovenia*** – The high English figure is because of a natural science database having animal names in English.

Languages other than the principle ones of a country are present in the sample surveyed. However this still probably is the result of the content itself.

4.4 MICHAEL system use

Questions 24-27 of the ATHENA survey asked if a collection was described in the MICHAEL[1] system and if it was not in MICHAEL why. The section also looked for other sources for collection description.

4.4.1 Description present in MICHAEL

21 of the collections surveyed are described in the MICHAEL system.
This is 14.5% of the collections.

4.4.2 Reasons why no description in MICHAEL

The table below gives an overview of the reasons why collections are not described in MICHAEL:

Reason	Number of collections: %
No MICHAEL national instance in my country	30: 25.0%
Description is being written (will be on MICHAEL later)	31: 25.8%
Collection is described elsewhere.	8: 6.7%
Other reason	53: 44.2%

Where 'Other reason' was given as an answer basically three reasons were given:

- Not involved in MICHAEL project;
- No collection description available;
- Only part of the collection is on MICHAEL.

Eight collections are described in places other than in the MICHAEL system. These are:

[1] See: http://www.michael-culture.org

- National Hellenic Research Foundation: **http://www.eie.gr**;
  National Documentation Center: **http://www.ekt.gr**;

- Own website: **http://www.statensarkiv.se/default.aspx?id=7550&refid=1132**;
  Swedish National Archival database:
  http://www.nad.ra.se/archive_index.aspx?id=99cdf394-4ea4-4284-8b02-f1cd625c41f9&s=Balder;

- **http://www.key-to-nature.net/wiki/Database_of_Invertebrate_Pictures_(PMSL)**;

- **http://www.numerique.culture.fr**;

- "*Collection described in our integrated museum system*" [3 collections from same organisation].

4.5 Digital object metadata

Questions 28-41 in the ATHENA survey dealt with the different types of media types in a collection. [At this time information for 84 collections has been collected].

4.5.1 Text objects

Text type	Number of collections : %
[All types]	42 : 52.4%

PDF	16 : 19.0%
Word	15 : 17.9%
XML	14 : 16.7%
HTML	12 : 14.3%
Plain text	8 : 9.5%
RTF	3: 3.6%
DjVu	1 : 1.2%
SGML	1 : 1.2%

4.5.2 Image objects

Image type	Number of collections: %
[All types]	78: 92.9%

JPEG	78: 92.9%
TIFF	40 : 47.6%
GIF	5 : 6.0%
BMP	4 : 4.8%
PNG	2 : 2.4%
DjVu	1 : 1.2%
RAW	1 : 1.2%
IMGF (by XLimage)	1 : 1.2%

4.5.3 Audio objects

Audio type	Number of collections: %
[All types]	9 : 10.7%

MP3	9 : 10.7%
WAV	6 : 7.1%
WMA	2 : 2.4%
AIFF	1 : 1.2%
MPG	1 : 1.2%
AudioCD	1 : 1.2%

4.5.4 Video objects

Video type	Number of collections: %
[All types]	12 : 14.3%

MPG	7 : 8.3%
AVI	6 : 7.1%
FLV (Flash Video Format)	6 : 7.1%
MOV (Quicktime)	4 : 4.8%
MP4	3: 3.6%
WMV (Windows Media Video)	3: 3.6%
SWF (Flash Movie)	2 : 2.4%
DVD Video	1 : 1.2%

4.5.5 Other digital types

Only two other media types appear in the survey (in one collection each):

- *Web animations (linear and interactive) - virtual objects in QuicktimeVR format*
- *42 exceptional objects from the archaeology department have been photographed in the round and can be turned as a 360 degree object generated by Modelweaver v2.00. (pending permission).*

4.5.6 Analysis of results

The digital content surveyed is dominated by still images and texts. There are some video and audio but they appear in much fewer numbers of collections and probably as even fewer numbers of digital objects. There are a very small number of other media types. Why is this? A number of factors spring to the authors' mind:

- Text (books, manuscripts and other forms) and still images (photographs, paintings, and prints) have been existence in their analogue forms for a considerably longer time than audio and video. Therefore there are much more of them existing to be digitised;
- Audio and video are more expensive to create and deliver over the Internet;
- IPR management issues are more difficult to deal with for audio and video.

The standards being used are no surprise. They the standards that a commonly recommended for use with the various media types. See the *Conclusions* for a suggested best practise guide.

4.6 Information schemes (metadata)

4.6.1 Metadata types

The data for this section was obtained from questions 42-45 in the Survey. The table below shows how many provider organisations use which information schemes (metadata). The schemes have be arranged by 'domain audience'. Note that where a scheme does not appear in answers to the survey it is not included in the table. Note where there are multiple collections from the same organisation, using the same schemes, they only contribute once to the table.

Standard [*domain audience*]	All	Provider Type					
		Museums	Libraries	Archives	Sound Archive	Aggregators	Other
Museum							
CDWA	1	1	0	0	0	0	0
museumdat	4	4	0	0	0	0	0
Object ID	7	6	0	0	0	1	0
SPECTRUM	15	13	0	2	0	1	1
Archive							
EAD	4	1	2	2	1	2	1
ISAD(G)	6	3	1	5	1	1	1
Library							
MARC	6	2	2	0	0	2	0
METS	1	0	1	0	0	0	0
MODS	3	1	1	0	0	1	0
General heritage							
CIDOC-CRM	9	3	1	2	0	2	4
VRA	1	1	0	0	0	0	0
Resource Discovery							
Dublin Core	22	10	3	5	2	4	7

Other [mostly in-house or national]	23	11	3	7	1	4	7

4.6.2 Metadata conclusions

Arranging the table by standard domain audience has revealed some interesting things about the cross-domain use standards:

- ***Museum metadata standards are not much used by the other domains.***
  Libraries and sound archives do not use any, while archives, aggregators and 'others' use a limited number. Is this because libraries and archives tend not to hold museum-type collections, with the need to fully describe all the different relationships between entities that a museum has to?
- ***Museums use other domain metadata standards.***
  Looking at the collections where this was the case showed that they were library or archive collections that were held at museums. This suggests that museums will use the appropriate standard for the type of collection.
- ***Dublin Core is a popular metadata scheme***.
  This scheme has been fashionable over the last few years for public access to cultural material. The challenge a Dublin Core-based system is whether it can support the rich nature of museum data as exemplified by the museum domain standards. At a first glance it does not seem to do this task.
- ***A significant number of museums (and organisations from other domains) use an in-house developed metadata schemes.***
  This is difficulty for automated ingestion of cultural data by Europeana (see next section also).

4.6.3 Standard adaption

Here are the figures for metadata scheme adaption:

Standard [*domain audience*]	Organisations using scheme	Organisations adapting scheme
Museum		
CDWA	1	0
museumdat	4	1
Object ID	7	3
SPECTRUM	15	4
Archive		
EAD	4	3
ISAD(G)	6	1
Library		
MARC	6	5
METS	1	0
MODS	3	2
General heritage		
CIDOC-CRM	9	7
VRA	1	0
Resource Discovery		
Dublin Core	22	14
TOTAL	79	40

These figures, if typical, show that just over 50% of information systems have changed the standard metadata scheme they are using. It is not very clear from the survey how much standards have been changed.

The adaption of a standard, in the context of Europeana, is important to know because variability with the standard may pose a barrier to the ingestion of that collection. These results, together with the significant numbers of in-house scheme systems, show the scale of the challenge.

4.7 IPR

4.7.1 IPR issues and Europeana

To the question: *Do IPR issues affect your contribution to Europeana in a negative way?*

- 35 gave the answer **'Yes' = 38.9%** of those who answered.

In all cases the issues were related to having part of the content in the collection where the organisation does own the intellectual property rights. Organisations would have to negotiate permissions and licences in order to contribute such material to Europeana. In some cases there is a cost barrier in others the IPR owner will not allow their material onto the Internet at all.

4.7.2 IPR License type awareness and use

Respondents were asked if they were aware of a number of different IPR licence types and if they used them. Here is a summary of their responses:

License scheme	Number aware of : %	Number using : %
Creative Commons	54 : 63.5%	3 : 3.5%
European Model EDI Agreement	8 : 9.4%	0 : 0%
Open access licenses	32 : 37.6%	7 : 8.4%

Organisations are to some extent aware of these licensing schemes, particularly Creative Commons, but they do not use them in significant numbers.

4.7.3 Orphan works

Respondents were asked what percentage of their collections were orphan works:

Percentage	Number of collections
[unknown]	13
0%	32
1-10%	16
11-20%	3
21-30%	0

31-40%	0
41-50%	1
Over 50%	1

These figures are fairly low. This might be because organisations have decided to only display content which they own the IPR to, is in the public domain (including out of copyright), or that they have cleared the rights for.

4.7.4 IPR issues affecting digitization and or display and solutions

To the question: *Have you had a situation where there were IPR issues when you were trying to digitize and or display this collection on-line?*

- 24 gave the answer **'Yes' = 28.6%** of those who answered.

When asked how they solved the issue:

Solution	**Collections : %**
Digitization was stopped	2 : 8.3%
Content was removed from display on-line	12 : 50.0%
Cleared the use with the copyright holder	15 : 62.5%
Created a workaround	8 : 33.3%

These figures indicate that where organisations are IPR aware they do carry out procedures to resolve the issues that arise.

Workarounds included:

- Restricting the quality of images (to thumbnails);
- Selling of publishable quality images (fees to IPR holder);
- Situation still unresolved.

4.7.5 Recording and managing IPR

To the question: *Do you record and manage IPR information about your objects and digital content?*

- 32 gave the answer **'Yes' = 36.4%** of those who answered.

In giving information about how they record rights information respondents revealed that the data was generally:

- ***Basic*** – Often just the name of the creator of the work (assumed rights holder) and perhaps other personal information;
- ***Not standards based*** – There are exceptions to this. A single organisation used SPECTRUM and another used ICCD - RA scheme: section CDG DC;

- ***No management of own rights*** – Or least it was not mentioned.

4.7.6 Protecting digital content

To the question: *Do you use a technology to protect your digital content ...?*

- 56 gave the answer **'Yes' = 62.2%** of those who answered.

Protection method	Number of collections using method
Low resolution	39
Watermark (visible and digital)	32
Sample only (audio and video)	1
Downloading prevention (by viewing software)	1

4.8 Terminology and data standards

4.8.1 Overview

This table gives the usage terminological standards in different areas:

Standard area	Number of collections using standard : %
Geographic names	40 : 44.4%
Geographic co-ordinates	8 : 8.9%
Date formats	49 : 55.7%
Time periods	24 : 27.3%
Subjects	43 : 47.8%
Person and organisation authorities	27 : 30.0%

Standards for geographic names, dates and subjects are most commonly used with approximately half of the collections using them. This is an expression of the aim of heritage organisations, including museums, to provide accurate access to their material in these areas, the:

- ***Where***;
- ***When***;

- ***What***.

However a more accurate *Where,* in the form of the use of geographic co-ordinate standards, is used in describing only c9% of collections. Is this because effort needed to maintain the use of such standards is too high to be practical?

The use of another *When*, time period terminology, is significantly less than date format standards. Again is this because of the lack of resources for maintaining (or creating) such a terminology?

Finally, do similar issues affect to use of person and organisation authorities?

Looking at how these standards are created:

Standard area	**Provider developed – collections using : %**	**Published standards – collections using : %**
Geographic names	26 : 65.0%	18 : 45.0%
Time periods	18 : 78.3%	9 : 39.1%
Subjects	20 : 46.5%	28 : 65.1%
Person and organisation authorities	19 : 70.4%	10 : 37.0%

The figures show a contrast between those areas where in-house developed terminologies are in the majority (geographic names, time periods, and person and organisation authorities) and subject terminologies where there is more use of published sources of terminology. However even with subject terminologies their usage is only just over 50%. Comments made by respondents to the survey in their forms suggest the reasons for developing their own terminologies included published terminologies are:

- Too unmanageable (and possibly too expensive) to use in their organisations;
- Not detailed enough for their collections (for example with local place names);
- Not in the local language. Although this sometimes leads to projects to translate terminologies from other languages, particularly English (for example the AAT).

The use of published national terminologies is mandated in some countries, for example Italy. As a result all organisations in the survey used a published source for subjects. In contrast other countries do not have this kind of system (e.g. the UK where 40% used published terminologies). It is not clear what the result of this situation will be in a Europeana context.

4.8.2 Date format standards

Just over half (49) of the respondents said that they used a standard date format. Looking at which format they said they used:

Standard	Number using standard
YYYY-MM-DD (ISO 8601) [note seven of these just use YYYY]	21
YYYYMMDD	3
YYYY.MM.DD	1
DD-MM-YYYY	1
DD.MM.YYYY	4
DD/MM/YYYY	8
MM/YYYY	2
D.M.YYYY	1
YYY [Month in text] DD	1
DD-[Month first 3 letters]-YYYY	1
CCCC DD YYY (century decade year, e.g.2000 00 09 = 2009)	1
Decenium (e.g. 1970/1980/1990)	1
"*Relative chronological system*"	1
ICCD OA (Italian national standard)	1
Library of Congress LCSL and Dewey	1
"*Format of THE MUSEUM SYSTEM (TMS)*"	1
ISAD(G)	1
"*Text data*"	5

Where mentioned BC dates are most commonly represented by appending ' BC' to the end of a date. The other method mentioned is the use of the negative sign. Also where a date range includes BC and AD dates then ' AD' is appended to the date.

Date ranges usually indicated by a hyphen character, sometimes surrounded by a space either side. In one case the ISO 8601 '/' character was used.

4.8.3 Geographic co-ordinates standards

Of the small number of collections that use (or were going to use) geographical co-ordinate standards:

- 3 used Latitude/Longitude;
- 1 used Lambert 2 extended; Lambert 97;
- 1 used EPSG:3004;
- 1 used Gauss Boaga;
- 1 used Country, X, Y, Z, UTM, location/place;
- 2 said they were going to use them in the future.

The following sections look at which published standards are used where:

4.8.4 Published geographic name standards

Country	Standard
Belgium	ISO list of short country names (English)
	Getty. Thesaurus of Geographic Names (TGN): **http://www.getty.edu/research/conducting_research/vocabularies/tgn/**
Finland	YSA - General Finnish Thesaurus: **http://www.yso.fi/onto/ysa/ysa_juuri**
	Tampereen virastokartta (Tampere city official map) Published by Tampereen yhdyskuntatuotanto, 1/2007
France	INSEE: **http://www.insee.fr/fr/methodes/nomenclatures/cog/**
	Getty. Thesaurus of Geographic Names (TGN) [only for archaeology collections]: **http://www.getty.edu/research/conducting_research/vocabularies/tgn/**
	Dictionary "Petit Robert".
Germany	German National Library. Subject headings (Schlagwortnormdatei, SWD; licensed, not public)
	National Statistical Bureau. List of municipalities (Gemeindeverzeichnis; licensed, not public)
	Getty. Thesaurus of Geographic Names (TGN) [licensed but not in use]: **http://www.getty.edu/research/conducting_research/vocabularies/tgn/**
Greece	Getty. Thesaurus of Geographic Names (TGN): **http://www.getty.edu/research/conducting_research/vocabularies/tgn/**
Italy	Indirizzario di Pompei, from: L. Esherbach, Gebäudeverzeichnis und Stadtplan der antiken Stadt Pompeji, Köln, 1993
Poland	**http://www.nukat.edu.pl/nukat/pl/kaba.phtml?dl=2&id=88&etykieta=151**
Slovenia	Country Code: ISO 2-letter code (As a thesaurus for localities is used ATLAS SLOVENIJE, 4th edition (2005).- Mladinska knjiga, Ljubljana.0
Sweden	SCB (Swedish standard geographical names)
	National Board of Antiquities Geographical Names
United Kingdom	Getty. Thesaurus of Geographic Names (TGN) [for reference]: **http://www.getty.edu/research/conducting_research/vocabularies/tgn/**

4.8.5 Published time period standards

Country	Standard
Belgium	**http://www.w3.org/TR/xmlschema-2/**
France	**http://www.culture.gouv.fr/documentation/joconde/fr/partenaires/AIDEMUSEES/telechargement.htm**
	http://www.culture.gouv.fr/documentation/joconde/fr/partenaires/AIDEMUSEES/epoq-200903.rtf
	http://www.culture.gouv.fr/documentation/joconde/fr/partenaires/AIDEMUSEES/telechargement.htm
	http://www.culture.gouv.fr/documentation/joconde/fr/partenaires/AIDEMUSEES/peri-200903.rtf
Israel	ISAD(G)
Italy	ICCD standard: **http://www.iccd.beniculturali.it/Catalogazione/standard-catalografici/normative/scheda-oa-d**
United Kingdom	Getty. Art & Architecture Thesaurus (AAT): **http://www.getty.edu/research/conducting_research/vocabularies/aat/**
	English Heritage Time Periods List: **http://www.fish-forum.info/i_apl.htm**

4.8.6 Published subject standards

Country	Standard
Belgium	Getty. Art & Architecture Thesaurus (AAT): **http://www.getty.edu/research/conducting_research/vocabularies/aat/**
	Getty. Art & Architecture Thesaurus (AAT) [in Dutch]: **http://www.aat-ned.nl**
	Iconclass: **http://www.iconclass.nl**
Finland	YSA: **http://vesa.lib.helsinki.fi/ysa/index.html** (Finnish Thesaurus)
	MASA: **http://www.nba.fi/fi/masaetusivu** (Museum Thesaurus)
	OCM - The Outline of Cultural Materials: **www.yale.edu/hraf/Ocm_xml/newOcm.xml**
	Valokuvan asiasanasto (Finnish thesaurus of photography): **http://www.fmp.fi/fmp_fi/muvieras/kirjasto/asiasan/index.htm**

Country	Standard
France	Thesaurus W: **http://www.ladocumentationfrancaise.fr/catalogue/9782911601064/**
	Système descriptif de l'architecture (DAPA): **http://www.culture.gouv.fr/culture/inventai/extranet/sysdesc.htm**
	Système descriptif de l'illustration (DAPA): **http://www.culture.gouv.fr/culture/inventai/extranet/sysdesc.htm**
	Système descriptif des objets mobiliers (DAPA): **http://www.culture.gouv.fr/culture/inventai/extranet/sysdesc.htm**
	Thesaurus PACTOLS: **http://frantiq.mom.fr/html/pactols/pactols_doc.html**
	Thesaurus Garnier. "Thesaurus iconographique, système descriptif des représentations" (1984).
	Thesaurus, sujets représentés: **http://www.culture.gouv.fr/documentation/joconde/fr/partenaires/AIDEMUSEES/telechargement.htm**
	Dictionary "Petit Robert".
Germany	SWD
	Iconclass: **http://www.iconclass.nl**
Greece	Getty. Art & Architecture Thesaurus (AAT): **http://www.getty.edu/research/conducting_research/vocabularies/aat/**
	The UNESCO Thesaurus: **http://databases.unesco.org/thesaurus**
	The Thesaurus for Graphic Materials of the Library of Congress (LC TGM I & II): **http://www.loc.gov/rr/print/tgm1/** & **http://www.loc.gov/rr/print/tgm2/**
Italy	ICCD terminologies: **http://www.iccd.beniculturali.it/Catalogazione/standard-catalografici/strumenti_di_ausilio_e_di_controllo**
	Subject Headings issued by the Biblioteca Nazionale Centrale di Firenze: **http://www.bncf.firenze.sbn.it/progetti/Nuovo%20Soggettario**
	Ethnomusicology Thesaurus, under development
Poland	Standard SSWIM (Object ID) and standard compliant with statutory requirements (in accordance with legal regulations)
Slovenia	International Code of Zoological Nomenclature: **http://www.iczn.org/iczn/index.jsp**

	GBIF: **http://www.gbif.org**
	EUNIS: **http://eunis.eea.europa.eu/index.jsp**
	ITIS: **http://www.itis.gov/index.html**
	BioCASE: **http://www.biocase.org**
Country	**Standard**
Sweden	ClassMaster: **http://classmaster.kmmuseum.se**
United Kingdom	MDA Archaeological Object Names Thesaurus: **http://www.collectionstrust.org.uk/archobj/archcon.htm**
	The Thesaurus of Monuments Types, English Heritage, v2.0, 1998: **http://thesaurus.english-heritage.org.uk/thesaurus.asp?thes_no=1**
	SHIC (Social History and Industrial Classification), 2nd ed, MDA, 1996 [not digital yet]

4.8.7 Published person and organisation authorities

Country	**Standard**
Belgium	RKD (Artist for artist names): **http://www.rkd.nl/rkddb/**
	Linden, Stijn van der, De Heiligen, Saints, attributes, monastries,... Amsterdam/Antwerpen, 1999.
	Getty. Union List of Artist's Names (ULAN) [for foreign artists]: **http://www.getty.edu/research/conducting_research/vocabularies/ulan/**
France	RAMEAU: **http://rameau.bnf.fr/informations/rameauenbref.htm**
	Vocabulary, list of authors: **http://www.culture.gouv.fr/documentation/joconde/fr/partenaires/AIDEMUSEES/telechargement.htm**
	Getty. Union List of Artist's Names (ULAN) [for foreign artists]: **http://www.getty.edu/research/conducting_research/vocabularies/ulan/**
	Authority lists for the Institutions names, Musées de France, Muséofile: **http://www.culture.gouv.fr/documentation/museo/**
	E. Benezit. Dictionnaire des peintres sculpteurs dessinateurs et graveurs
Germany	SWD (Subject Headings Authority File):

	http://www.d-nb.de/eng/standardisierung/normdateien/swd.htm
	Allgemeines Künstlerlexikon (AKL; licensed, not public).
Greece	Getty. Union List of Artist's Names (ULAN) [for foreign artists]: **http://www.getty.edu/research/conducting_research/vocabularies/ulan/**
	LCNA (Library of Congress Name Authority File)
Israel	The National Library of Israel. Hebrew Authority File for Names in Hebrew
	LCNA (Library of Congress Name Authority File)
Italy	Regole italiane di catalogazione per autori (Italian national rules for author entries)
	ICCD standard - Scheda AUT: **http://www.iccd.beniculturali.it/Catalogazione/standard-catalografici/normative/scheda-aut-bib**
United Kingdom	Getty. Union List of Artist's Names (ULAN): **http://www.getty.edu/research/conducting_research/vocabularies/ulan/**

From the above data shows that the use of a published terminology source depends on one or more of the following:

- ***Subject area*** – Is there a suitable source covering the area being recorded available?
- ***Language*** – Is there a source in the organisation's main working language available?
- ***National standard*** – Is there a mandated standard source available?
- ***International standard*** – Is there an internationally recognised standard (usually *de facto*) available?

From the survey sample possible candidates for international standards are those created by Getty (ATT, ULAN, and TGN) and possibly LCNA.

4.9 Contributing to Europeana

Information about contributing to Europeana was obtained from the answers to Questions 105-116 in the survey:

4.9.1 URLs and other identifiers

To the question: *Does every digital item in the collection have its own unique URL?*

- 40 gave the answer **'Yes' = 50.6%** of those who answered.

To the question: *How long will you guarantee the long-term persistence of that URL?*

- The answer varied between no persistence and 'permanent'. The most common period varied between **5 and 10 years**.

To the question: *If not, do you use other types of identifiers that can be used, through an existing resolution service, to provide persistent access to the object over time?*

- 40 gave the answer **'Yes' = 50.6%** of those who answered;
- 38 gave the type as 'Local identifier' or a variant of this. The other two gave 'Open URL'

4.9.2 Downloadability of data

To the question: *Could the digital items in this collection be downloaded via FTP?*

- 24 gave the answer **'Yes' = 30.4%** of those who answered.

To the question: *Are the metadata records harvestable via OAI-PMH?*

- 17 gave the answer **'Yes' = 21.5%** of those who answered;
- However only 6 gave a base URL. The rest indicated OAI harvesting was planned.

To the question: *What protocol is currently used to search the collection?* The following protocols were given as answers from the 47 collections who answered (some collections can be searched by more than one protocol):

Search protocol	Number of collections: %
SQL	28 : 59.6%
Proprietary to system	9 : 19.1%
Z39.50	7 : 14.9%
XPATH	3 : 6.4%
SRW	2: 4.3%
SPARQL	1 : 2.1%
SRU	1 : 2.1%
SVR	1 : 2.1%

To the question: *Could the metadata for this collection be downloaded via FTP?*

- 20 gave the answer **'Yes' = 42.5%** of those who answered.

4.9.3 Commercial computer systems

To the question: *Is a commercial computer system used to manage this collection?*

- 35 gave the answer **'Yes' = 44.3%** of those who answered.

Not all systems were named. Here are the ones with the number of systems:

- Adlib (Adlib Information Systems) - 7
- CollectionConnection (Cit) -1
- EXLIBRIS ALEPH 5000 – 1
- HUNTEKA (a Hungarian integrated system for museums and libraries) - 1
- Imdas-Pro (Joanneum Research) - 1
- KE eMu - 1
- Mistral - 1
- ModesXML (MODES Users Association) - 1
- MUiS Museum Information System - 1
- Museum Plus (Zetcom AG) - 1
- Musims (from System Simulation) - 1
- Oracle 10g Database Standard Edition - 1
- Profium Metadata Server - 1
- SQL Server - 1
- TEXTML Server (Ixiasoft) - 1
- The Museum System (Gallery Systems) - 2
- XDAMS – 1

4.9.4 Aggregation

To the question: *Is the metadata for this collection aggregated by anyone else?*

- 21 gave the answer **'Yes' = 26.6%** of those who answered.

The following aggregators (sometimes more than one per collection) were given by respondents:

Aggregator	Country	Number of collections
MovE: **http://www.museuminzicht.be/public/collecties/index.cfm**	Belgium (regional)	1
collections.fr	France (national)	2
BAM-Portal **http://www.bam-portal.de**	Germany	1
CulturaItalia: **http://www.culturaitalia.it**	Italy (national)	2
Archivi del Novecento: **http://www.archividelnovecento.it**	Italy (thematic)	1
KMM **http://samsok.museum24.se**	Sweden (national)	3
Creative Spaces **http://bm.nmolp.org/creativespaces/**	United Kingdom (national museums)	1
People's Network Discover Service **http://www.peoplesnetwork.gov.uk/discover/**	United Kingdom (national)	6
Wiltshire Treasures **http://www.wiltshiretreasures.org**	United Kingdom (regional)	1
Port Cities UK **http://www.portcities.org.uk**	United Kingdom (thematic)	1
Artcyclopedia **http://www.artcyclopedia.com**	United States? / International?	1
MultiMatch **http://www.multimatch.org**	International	1
The European Archive **http://www.europarchive.org**	International	1
K2N repository **http://www.keytonature.eu**	International (thematic)	1

The lack of aggregation this sample represents, except perhaps in the UK. This suggests there needs there to be some work to be done in encouraging national aggregators for museum content throughout Europe.

5. Conclusions

5.1 Cultural metadata standards

There are a limited number of key standards, and they are used extensively throughout Europe and indeed the world. These are often suggested as best practise but, from the evidence of the survey, there is still a long way to go to achieve interoperability. National standards in some countries are also a factor that needs to taken into consideration for future work.

Dublin Core (DC) has been used extensively as a 'minimum' metadata standard for resource discovery, most notably with Europeana itself. However relationships between DC and the domain-specific metadata standards need to be defined and interchange enabled in some way. XML and in particular the XML-related XSLT (Extensible Stylesheet Language Transformations) may offer a solution to this.

XSLT is used for the transformation of one kind of XML document into a kind of XML document (or indeed to a human readable form). So it should be possible to transform data in a domain-specific metadata standard to Dublin Core. However it is unlikely that it will possible to transform data from DC to a domain-specific metadata form, except for a limited number of elements.

The work of the next part of WP3 should be:

- ***Metadata adaption*** – Look further into the impact of metadata standard adaption. The aim being to define a set of advice and guidance materials highlighting the severe consequences in terms of interoperability of uncontrolled and possibly unnecessary adaption of standard;
- ***Metadata content quality*** – The quality of the content of the data in metadata record, especially free text descriptions, affects possibility of automatic data mining to extract relevant information for searching. The authors think that it is worth putting some effort into researching this issue and giving advice on it to the museum community;
- ***Metadata mapping*** - Between the major metadata standards, for example, DC, including the Europeana Semantic Elements (ESE), museumdat, and SPECTRUM.
- ***XML*** – Seek to use XML as a methodology for data export, conversion and exchange. XML schemas for the important metadata standards should be indentified or if not available created.
- ***XSLT*** – ATHENA should test the use of XSLT in the role of data conversion, in the first case between museumdat and SPECTRUM and DC/ESE.

5.2 Technical standards

There are a great many technical standards for virtually all multimedia resources including many open standards.

For good an up-to-date general guide to which standards a cultural organisation should use one need not look further than the Minerva Project's:

Technical Guidelines for Digital Cultural Content Creation Programmes:
http://www.minervaeurope.org/interoperability/technicalguidelines.htm
[with links to various versions]

The technical standards it recommends are those being used by the organisations who took part in the ATHENA survey. The Guidelines have other advantages. They are:

- ***Multilingual*** – Having a guide in the working language of the organisation is a great advantage for their understanding and adoption. Further translation should be encouraged;
- ***Written for a general cultural sector audience*** – purely technical guidelines are a barrier to the general audience, which most people in the cultural sector are in this area;
- ***Updated*** – Is it very important that technical guidelines are kept up-to-date, especially in the rapidly changing IT area.

5.3 IPR standards

The status of the actual practise of IPR management in the cultural sector, especially outside the major institutions is not clear. The survey suggests that there is patchy recording of information about rights associated with cultural materials (including, but not exclusively IPR).

This suggests that there is still a knowledge gap in this area, which WP 6 of this project will address. However they are not working in a total knowledge vacuum. Practise in the UK, led by Collections Trust, can serve as a model for the rest of Europe. Collections Trust has:

- Provided simple guidelines;
- Created training modules;
- Embedded rights management, as a procedure with supporting information requirements, into the SPECTRUM standard.

WP3 and WP6 will cooperate closely to ensure all the resources that are available are disseminated and used by as large a museum audience as possible.

5.4 Terminology standards and multilingualism

The use of terminological standards is important factor in delivering semantic interoperability and so the enhance the functionality of searching. There are terminology resources for most areas of cultural information: What, When, Where, Who. However, except possibly the Getty thesauri, there are no common sources.

Also multilingual resources do not seem to exist and certainly are not used by organisations in the surveyed sample.

Finally, despite there being an international standard and the importance of this aspect of cultural information, there is no ‘universal’ system in use for expressing dates and date ranges in our information systems. The current Europeana prototype does not support both BC dates, date ranges, or time periods all of which are a vital part of museum practise.

Therefore there are issues, particularly in the context of a Europeana group project working with museum content, that need to be addressed:

- ***Terminology directory*** – There should be the first steps in setting up a service which provides information about the full range of terminology resource that are available and, if possible, allows direct access to them.
- ***Temporal standards*** – ATHENA should encourage the use of the ISO standard or at least date forms that can easily be converted to the ISO standard. It should lobby Europeana 'central' to meet the needs of the museum community.
- ***Multilingualism*** – ATHENA should create a small useful multilingual terminology source, where possible based on existing work. Its creation should be a priority and serve as a model of best practice.

WP3 is actively engaging with those working in WP4, and is confident that these suggestions will be acted on.

Appendix I – The ATHENA Survey questions

Provider Information

Please give the following information about the organisation providing the content:

1. Country

2. Provider name

3. Address (include postcode)

4. Is the provider a (tick ☑ all that apply)?

☐ Museum
☐ Library
☐ Archive
☐ Sound archive
☐ Aggregator
☐ Other

5. If you ticked 'Other' please give organisation type

Primary contact

6. Name

7. Job title

8. Telephone number

9. E-mail address

Alternative contact (if possible)

10. Name

11. Job title

12. Telephone number

13. E-mail address

Technical contact (if possible)

(This someone who is familiar with the system where your metadata is stored)

14. Name

15. Job title

16. Telephone number

17. E-mail address

Collection Description

Please give the following information about this collection.

(**Note** that the information you enter should only be for this collection and not for the organisation in general.)

18. Collection name.
For example: "Museum collection database"; "Video archives"; "WWII archive"; "Dinosaur fossils collection".

19. Collection theme(s) or subject(s).
For example: "Early commercial TV programmes in UK"; "Cartographic archives of Southern Spain"

20. The time periods which the content of the collection covers.
For example: "1914-1939"; "Medieval (1066-15th century)"; "Prehistory-Present (50,000BC-2008)"; "6 billion years ago-present"

21. Language of the digital objects (Roughly provide the % of each language and show if any dual language).
For example: "Spanish 80%; English 20%"; "French 100%"; "Catalan 80%; Spanish 15%; Latin 5%"

22. How many digital objects can you contribute to Europeana through ATHENA from this collection? Please give the detail of your digital objects level.
For example: "About 90,000 (Copyright protected objects and free to use)"; "Books objects are at the volume level. Journal objects are at the year level"

23. How many thumbnails or samples can you contribute to Europeana through ATHENA from this collection? Please give the detail of your digital objects level.
For example: "About 80,000 Low resolution images, low quality movies)"; "Thumbnails of books showing the cover/title page"

MICHAEL

24. Is there a description of this collection in your country's MICHAEL national instance?

☐ Yes
☐ No

25. If you chose 'yes' please provide the URL of the description

26. If you answered 'No' please tick (☑) which of the following is the reason

☐ No MICHAEL national instance in my country
☐ Description is being written (will be on MICHAEL later)
☐ Collection is described elsewhere
☐ Other reason

27. If you answered 'Collection is described elsewhere' or 'Other reason' please give details

Digital Object Metadata

Please give to following information about the metadata of the digital objects in this collection.

(**Note** that the information you enter should only be for this collection and not for the organisation in general.)

28. Do you have Text digital objects?

☐ Yes
☐ No

29. If 'Yes' please tick all the Text formats you have.

☐ DjVu
☐ HTML
☐ PDF
☐ Plain text
☐ RTF
☐ SGML
☐ Word
☐ XML

30. If you have any other Text formats please list them here.

31. Do you have Image digital objects?

☐ Yes
☐ No

32. If 'Yes' please tick all the Image formats you have.

☐ BMP
☐ DjVu
☐ GIF
☐ JPEG
☐ PNG
☐ TIFF

33. If you have any other Image formats please list them here.

34. Do you have Audio digital objects?

- ☐ Yes
- ☐ No

35. If 'Yes' please tick all the Audio formats you have.

- ☐ AIFF
- ☐ MP3
- ☐ MPG
- ☐ WAV
- ☐ WMA

36. If you have any other Audio formats please list them here

37. Do you have Video digital objects?

- ☐ Yes
- ☐ No

38. If 'Yes' please tick all the Video formats you have.

- ☐ AVI
- ☐ FLV (Flash Video Format)
- ☐ MOV (Quicktime)
- ☐ MP4
- ☐ MPG
- ☐ RM (Real Media)
- ☐ SWF (Flash Movie)
- ☐ WMV (Windows Media Video)

39. If you have any other Video formats please list them here.

40. Do you have any other types of digital objects not covered above?

- ☐ Yes
- ☐ No

41. If 'Yes' please describe them.

Information Scheme(s) (Metadata)

42. Please check the all boxes for the information schemes (metadata) that are used to describe the digital objects in this collection.

- ☐ CDWA
- ☐ CIDOC-CRM
- ☐ Dublin Core
- ☐ EAD
- ☐ FRBR
- ☐ ISAD(G)
- ☐ MAB
- ☐ MARC
- ☐ METS
- ☐ MIDAS
- ☐ MODS
- ☐ museumdat
- ☐ Object ID
- ☐ SPECTRUM
- ☐ TEI
- ☐ VRA
- ☐ Other

43. If you answered 'Other' please give details.

44. Did you adapt the standard?

- ☐ Yes
- ☐ No

45. If 'Yes' then please say how you adapted the standard.

Intellectual Property Rights (including copyright)

46. Do IPR issues affect your contribution to Europeana in a negative way?

☐ Yes
☐ No

47. If you answered 'Yes' please give details.

48. Please give a brief statement about the access rights to use the content in this collection.

For example: "Public domain"; "Licensed"

Licensing methods

Please give us information about following licensing methods for giving permission to use the content in this collection:

49. Are you aware of Creative Commons licenses?

☐ Yes
☐ No

50. Do you use Creative Commons licenses to give permission to access to your content (assuming you own the rights)?

☐ Yes
☐ No

51. If you answered 'Yes' please tell us which type of Creative Commons license(s) you use.

For example: "Attribution, Non-Commercial, No Derivatives"

52. Are you aware of the European Model EDI Agreement?

☐ Yes
☐ No

53. Do you use European Model EDI Agreement to provide access to your content (assuming you own the rights)?

☐ Yes
☐ No

54. Are you aware of open access licenses?

☐ Yes
☐ No

55. Do you use open access licenses to give permission to access to your content (assuming you own the rights)?

☐ Yes
☐ No

56. If you use other licensing methods please give details.

Orphan works

An **orphan work** is a copyrighted work where it is difficult or impossible to contact the copyright holder.

57. What is the percentage of orphan works in your collection?

Dealing with IPR issues

58. Have you had a situation where there were IPR issues when you were trying to digitize and or display this collection on-line?

☐ Yes
☐ No

59. If you answered 'Yes' please give details of the situation.

60. How did you resolve the situation? (Tick all that that you did)

- ☐ Digitization was stopped
- ☐ Content was removed from display on-line
- ☐ Cleared the use with the copyright holder
- ☐ Created a workaround

61. If you answered 'Created a workaround' please give details.

62. Who do you turn to when you have an IPR issue? (Please provide give contact details if possible).

IPR metadata

63. Do you record and manage IPR information about your objects and digital content?

- ☐ Yes
- ☐ No

64. If you answered 'Yes' please give us the information about the metadata scheme that you use.

IPR protection

65. Do you use a technology to protect your digital content (e.g. digital watermarking, scarring, low resolution)?

- ☐ Yes
- ☐ No

66. If you answered 'Yes' please give us the information about the technology that you use.

Geographic Name Terminology and Co-ordinate Standards

Please tell us which geographic name terminologies and co-ordinate standards are used to describe the digital objects in this collection.
Note that we are defining a 'standard' to be a published terminology. It might be a formal standard, a national authority file, or another published terminology source (for example Getty's *Thesaurus of Geographic Names* (TGN)).

(**Note** that the information you enter should only be for this collection and not for the organisation in general.)

Geographic Name Terminology

67. Do you use a standard set of terms for geographic names?

☐ Yes
☐ No

68. If 'Yes' is the source for the terms?

☐ Developed by the provider
☐ A published standard

For provider-developed terminology

69. Please give details
Include the contact details of the person who we can ask for more information.

For published terminology, please give a reference for each source used. If the source is available on-line please give its URL (web address).

For example: TGN

70. Source reference

71. Source reference

72. Source reference

73. Source reference

74. Source reference

Co-ordinate Standards

75. Are geographic co-ordinates used to describe this collection? (for example 61.0124N, 5.8125E).

☐ Yes
☐ No

76. If 'Yes' which reference system do you use?
For example: latitude/longitude; WGS 84 UTM 32N; RT9; OSGB 1936; DHDN Zone 1

Date Format and Time Period Terminology

Date Format

77. Is a standard date format (or formats) used to describe the digital objects in this collection?

☐ Yes
☐ No

78. Which date format do you use?

Time Period Terminology

Note that we are defining a 'standard' to be a published terminology. It might be a formal standard, a national authority file, or another published terminology source (for example Getty's *Art and Architecture Thesaurus* (AAT)).

79. Do you use a standard set of terms for time periods?

☐ Yes
☐ No

80. If 'Yes' is the source for the terms?

☐ Developed by the provider
☐ A published standard

For provider-developed terminology

81. Please give details
Include the contact details of the person who we can ask for more information.

For published terminology, please give a reference for each source used. If the source is available on-line please give its URL (web address).

82. Source reference

83. Source reference

84. Source reference

85. Source reference

86. Source reference

87. If you have any additional comments please make them here

Subject Terminology

Note that we are defining a 'standard' to be a published terminology. It might be a formal standard, a national authority file, or another published terminology source (for example Getty's *Art and Architecture Thesaurus* (AAT) and the Unesco Thesaurus).

88. Do you use a standard set of terms for subjects associated with the content (for example: object name, subject, and iconography)?

☐ Yes
☐ No

89. If 'Yes' is the source for the terms?

☐ Developed by the provider
☐ A published standard

For provider-developed terminology

90. Please give details

Include the contact details of the person who we can ask for more information.

For published terminology, please give a reference for each source used. If the source is available on-line please give its URL (web address).
For example: AAT, Iconclass, SWD/RSWK, RAMEAU, LCSH, DDC, UDC

91. Source reference

92. Source reference

93. Source reference

94. Source reference

95. Source reference

96. If you have any additional comments please make them here

Person and Organisation Terminology

Note that we are defining a 'standard' to be a published terminology. It might be a formal standard, a national authority file, or another published terminology source (for example Getty's *Union List of Artist's Names* (ULAN)).

97. Do you use standard authorities for persons and organisations?

☐ Yes
☐ No

98. If 'Yes' is the source for the terms?

☐ Developed by the provider
☐ A published standard

For provider-developed terminology

99. Please give details

Include the contact details of the person who we can ask for more information.

For published terminology, please give a reference for each source used. If the source is available on-line please give its URL (web address).
For example: LCNA, ULAN

100. Source reference

101. Source reference

102. Source reference

103. Source reference

104. Source reference

Contributing to Europeana

Please give us information about how you will provide your content to Europeana

105. Does every digital item in the collection have its own unique URL?

☐ Yes
☐ No

106. If 'Yes' how long will you guarantee the long-term persistence of that URL?

For example: "For 5 years, but unique ID for longer term"

107. If not, do you use other types of identifiers (catalogue or inventory numbers, NBN, DOI, PURL, ARK, Open URL) that can be used, through an existing resolution service, to provide persistent access to the object over time?

For example: "Yes. Local identifier (but still discussing)"

108. Could the digital objects in this collection be downloaded via FTP?

☐ Yes
☐ No

109. Are the metadata records harvestable via OAI-PMH?

☐ Yes
☐ No

110. If you use OAI-PMH, please give us the base URL of OAI-PMH server, and set name(s) if applicable

111. What protocol (Z39.50, SRU, or SQL, etc) is currently used to search the collection?

112. Could the metadata for this collection be downloaded via FTP?

☐ Yes
☐ No

113. Is a commercial computer system used to manage this collection?

☐ Yes
☐ No

114. If 'Yes' please tell us which system.

115. Is the metadata for this collection aggregated by anyone else?

☐ Yes
☐ No

116. If 'Yes' please tell us by whom.

In case of large aggregators (for example national culture portals, museums portals or thematic portals) please give full details of the organisation that promotes them, in particular where they are ministries or local government bodies

Appendix II – Collection content surveyed

This appendix gives brief descriptions of the collection content surveyed for this deliverable. The information was obtained from the answers to questions 1-2, 4-5 and 18-27 in the ATHENA survey.

It is organised by country and by provider type within a country. Where a provider has indicated that they are more than one type they may appear more than once in a country entry, depending on the nature of the collection.

Belgium

Museum collections

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
ModeMuseum Provincie Antwerpen – MoMu	Museum collection database	Costume, textiles and fashion (mainly Belgian).	1500-Present	[not applicable]	20,000
	Museum library database	Costume, textiles, and fashion. (Library does not limit itself geographically).	Prehistory-Present	[?]	c15,000 (book descriptions)
MuHKA (Museum for Contemporary Art Antwerp)	Museum collection	Contemporary art.	1965-Present	Dutch 100%	c1000 art works
Royal Museum for Central Africa, Tervuren	Photograph collection database	Field photographs relating to Belgian Congo and Democratic Republic of Congo.	1885-Present	French 65%; Dutch 25%; English 10% (approximately)	c100,000 (reproductions of historical photographs and related text)
Royal Museums of Art and History	Museum collection database	Collection of Near East, exhibition "Giligamesh".	[?]	French 100 %; Dutch 10%	613 objects (with 8 related metadata records)
S.M.A.K.	Contemporary art collection	Contemporary art.	1945-Present	Dutch 95%; Other 5% (English, French, German)	c200

Archive collections

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Stadsarchief Antwerpen (Antwerp City Archives)	Photograph Archive	City history of Antwerp, harbour, inhabitants, districts, monuments, events, and street views.	1850-2000	Dutch 100%	c31,000

Aggregation

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Vlaamse Kunstcollectie	Collection database of three museums of fine art	European fine art (paintings, sculptures, drawings and prints).	1400-1999	[metadata in English and Dutch]	c6500

Other – Government art collection

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Flemish Government	Collectie Vlaamse Gemeenschap (Collection Flemish Government)	Contemporary and visual art.	1965-2009	Dutch 100%	800

Other – Scientific federal Institution collection

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Royal Institute for Cultural Heritage (KIK-IRPA)	Photographic collection of art objects belonging to the other Belgian participating scientific institutions.	Mostly black and white photographs of works of art.	[?]	[not applicable] (metadata in French and Dutch)	12,750 (from RMA, others unclear)

Cyprus

Other – government department collections

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Department of Antiquities	Ancient Jewellery Collection	Ancient jewellery	[?]	English	15
	Statues and Artefacts Collection	Statues and artefacts as point clouds	[?]	[not applicable]	20 point clouds
	Magazine Collection	Magazines	[?]	Greek; English	15,000 pages
	Book Collection	Books	[?]	Greek; English	30,000 pages
Ministry of Education and Culture	Magazine Collection	Magazines	[?]	Greek; German; English; French	5000 pages
	Newspaper Collection	Newspapers	[?]	Greek; German; English; French	20,000 pages
	Manuscript Collection	Manuscripts	[?]	Greek; German; English; French	10,000 pages
	Book Collection	Books	[?]	Greek; German; English; French	30,000 pages

Estonia

Other – Government department collection

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Estonian Ministry of Culture	MuIS – Museums information system (database about museum collections, items)	Covers various themes, materials, subjects (e.g. art, history, and design)	Prehistory-Present	Estonian 85%; English 5%; German 5%; Russian 5%	c300,000 objects (10,000 thumbnails)

Finland

Museum collections

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
AAM – Alvar Aalto Museum	Photograph collection	Architecture and design by Alvar Aalto.	[?]-1898	Finnish 100%	c10,000
FNG – Finnish National Gallery	Museum collection database	Art.	1300-Present	[?]	34.000 objects; 6,000 artists
KMCH – Kuopio Museum of Cultural History	Museum collection database	Photos, objects and archive files from Kuopio and Northern Savo area.	1750-2000	Finnish 100%	[?] (c1000-50,000)
LCM – Lahti City Museum	Museum collection database	Collection of the former Vyborg (viipuri) Historical Museum; Collection of the ASKO furniture factory	1700-1939 (Vyborg); 1918-1999 (Asko)	Finnish 100 %	2540
Lusto the Finnish Forest Museum	KANTAPUU Museum collection database	Artefacts, photographs, films, archive materials and publications concerning mainly the Finnish forestry and forest history.	1850-Present	Finnish 100%	c35,000 (photograph); 5000 (artefacts)
NBA – National Board of Antiquities	The collections of the National Museum of Finland	Cultural history objects and pictures.	Prehistory-Present	Finnish 100 % (object names partly translated in English)	50,000
Sarka, the Finnish Museum of Agriculture	Museum collection database	The history of Finnish agriculture.	1600-Present	Finnish 100%	2500
TM – Tampere Museums	Museum collection database	Textile industry in Tampere: textile factories	1820-1990	Finnish 100%	c7000

		Tampella and Finlayson as examples.			

Library collections

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
UH.HUL – National Library of Finland, National Digitisation Centre	Scholarly journals and other journals	Scholarly and general journals.	1800-1899 (mainly)	Finnish 70%; Swedish 30%	c100,000 pages
	Newspapers in Finland	The early newspapers published in Finland.	1771-1900	Finnish 60%; Swedish 40%	c1,000,000 pages (c800,000 pages have already been contributed to Europeana – can be regarded as part of the ATHENA Project as well)

Archive collections

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
NA – National Archives of Finland	The Gregorian Chant Collection of Gummerus	Late medieval chants and manuscripts.	1400-1600	Latin	[?]

France

Aggregation (national)

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Ministry of Culture and Communication (MCC)	Collections.fr	Archaeology, ethnology, fine arts, performing arts, movables, sculpture, painting, architecture, prehistory, drawings, science and technology, photography, postcard, archives, and medieval illuminations.	Prehistory-Present	French 100% (other languages – regional languages)	0 [Already contributing to Europeana]
	Joconde (French museums collection database)	Archaeology, ethnology, fine arts, science and technology.	Prehistory-Present	French 100%	0 [already made available to Europeana through the Collections.fr portal]

Germany

Museum collections

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
The content is from the following organisations: • Badisches Landesmuseum Karlsruhe (BLMK) • Haus der Geschichte Baden-Württemberg, Stuttgart (HGS) • Landesmuseum für Technik und Arbeit, Mannheim (LTAM) • Landesmuseum Württemberg Stuttgart (LMWS) • Lindenmuseum Stuttgart (LMS) • Inventar der Kunsterwerbungen (MWK) • Staatliche Kunsthalle Karlsruhe (SKK) • Staatliches Museum für Naturkunde Karlsruhe (SMNK) • Staatsgalerie Stuttgart (SGS) • Städtische Museen Freiburg (SMF) • Stiftung Schloß Friedenstein Gotha (SFG)	[Museum collections]	Cultural history (archaeology, craftwork objects, popular culture, technical objects etc.), art history, and natural history objects.	Prehistory-Present	German 100% (almost)	c10,000

Greece

Museum collections

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
27th Ephorate of Prehistoric and Classical Antiquities [Regional Archaeological Unit of the Hellenic Ministry of Culture]	Collection of Archaeological finds from the late Bronze age to the early Iron age (unpublished)	Pottery and small finds from the Olympus area (unpublished)	1500 BC- 700 BC	[not applicable]	c1000
Archaeological Museum of Thessaloniki [Hellenic Ministry of Culture]	Sculpture Collection of the Archaeological Museum of Thessaloniki	Stone sculptures (architectural pieces, statues, reliefs) dating from the archaic period until late Roman times from the city of Thessaloniki and the region of Macedonia.	Late Archaic Period-Late Antiquity	[not applicable]	322
Byzantine and Christian Museum [Hellenic Ministry of Culture]	Loverdos Collection	Signed Icons.	1400-1999	[not applicable]	120
	Collection of Icons of painters from Crete to Ionion	Icons.	1500-1699	[not applicable]	20
	Lambakis Photographic Collection	Photographs of monuments for Thrace and Constantinople.	1800-1899	[not applicable]	50
	Collection of Embroideries from Constantinople	Embroideries from 17th to 19th century.	1600-1899	[not applicable]	10
	Paintings Collection-Nazarene Painting	Nazarene painting.	1800-1899	[not applicable]	10
	Collection of coins and valuables of the 7th century AD.	The Kratigos, Mytilene Treasure.	600-699	[not applicable]	65
Epigraphical Museum	Collection Of Ancient Greek And Roman Inscriptions	Decrees, catalogues ,honoraries, votives, sepulchral etc.	700 BC-499	Greek 95%; Hebrew 1%; Latin 3%	50
Greek Press Museum	Historical Archive of the Press Museum	Newspapers from 1815, journals from 1852, books and artefacts.	1815-Present	Greek 100%	c300,000
Museum of Asian Art	Japanese painting (17th-19th centuries)	Prints, screens, scrolls and books.	1600-1899	[not applicable]	150

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Museum of Cycladic Art	Ancient Cypriot Art	Archaeological objects of Ancient Art from Cyprus: marble sculpture; stone figurines; bronze tools and weapons; bronze vessels; bronze figurines ; gold jewellery ; bronze jewellery; pottery; clay figurines ; glass vases; coins.	3900 BC-599	[not applicable]	100
	Ancient Greek Art	Archaeological objects of Ancient Greek Art: marble sculpture; stone vessels; bronze tools and weapons; bronze vessels; bronze figurines; gold jewellery; bronze jewellery; pottery; clay figurines; glass vases.	2000 BC-395	[not applicable]	150
	Cycladic Culture	Archaeological objects of the Early Bronze Age from the Cyclades, Greece: marble figurines; marble vessels; copper tools and weapons; metal figurines; pottery.	3200 BC-2000 BC	[not applicable]	90
Museum of the City of Athens – Vouros-Eutaxias Foundation	Collection of paintings	Greek-European-Asian-African-Asia Minor landscapes, Greek monuments, portraits, still nature, Greek, Ottoman and Albanian costumes, Ethnographic themes	1600-Present	[not applicable]	624
National Archaeological Museum of the Hellenic Ministry of Culture	Vlastos - Serpieri Collection	A selection of vases and part of the archive of the collector	799 BC-300 BC	[not applicable]	100
National Museum of Contemporary Art	Contemporary Art Collection	Painting, 3D (installations), photographs, video, video-installations, sound installations, books	1900-1999	[not applicable]	c500
Piraeus Bank Group Cultural Foundation [museum and archive]	Collection of Marble Crafts-Greece	Collection of original works in marble for secular, ecclesiastical, funerary and everyday use, clay models and plaster casts, tools for quarrying and for carving marble, machinery, multimedia archival material, drawings by past marble-carvers. Tinos island Greece.	1700-1999	[not applicable]	300

Archive collections

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Archive of Lampakis' Family	Lampakis' Family Archive of Postcards	Postcards	1800-1999	Greek 100%	c2300
National Theatre of Northern Greece	Performances Archive	Production info (contributors, date). Performances details (number of performances, tours, spectators): • PP0001 Oedipus Tyrannus; • PP0003 Dolly, The Matchmaker; • PP0004 The Lady with the White Gloves; • PP0145 Medea; • PP0309 Six Characters in Search of an Author; • PP0554 Beauty and the Beast; • PP0555 88 Oak Trees and a Million Windflowers; • PP0560 Come On and Kill Me My Dear; • PP0566 From the 'Bacchae'; • PP0568 Julian the Transgressor; • PP0580 Why Madonna and Not Me; • PP0582 A Streetcar Named Desire; • PP0583 Locus Ceruleus; • PP0587 Pirate in Love; • PP0589 The Caucasian Chalk Circle; • PP0590 Henry IV; • PP0594 King Lear.	1961-2008	Greek	1499
Papafeio Orphanotrophy of Thessalonikh "Meliteys"	Papafi Archive	Official and private correspondence with high historical and cultural interest.	1800-1930	Greek; English; French; Italian.	3000 (at least)
Historical Archive of the Aegean "Ergani"	Kourtzis Archives	Includes architectural and industrial drawings and plans, technical manuals and designs, diplomatic and accounting records, diaries and logbooks, Ottoman property documents, maps, personal and business letters, market studies, advertising material, newspapers and magazines, ethnographic period footage in the form of 48 amateur 9.5mm Pathé Baby movies of the period 1924-1927, photographs, postcards, works of art etc.	1800-1999	Greek 90%; English 2%; French 1%; German 5%; Ottoman Turkish 2%	c1500

Other – Regional archaeological units of the Hellenic Ministry of Culture collections

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
10th Ephorate of Byzantine Antiquities	Icons of Mount Athos and Chalkidiki	Icons.	900-1899	[not applicable]	2500
	Mural Paintings of Mount Athos and Chalkidiki	Mural paintings.	900-1899	[not applicable]	2500
11th Ephorate of Byzantine Antiquities	Portable icons collection	Byzantine and Post-Byzantine icons from Veroia.	Byzantine-Post-Byzantine	[not applicable]	89
15th Ephorate of Prehistoric and Classical Antiquities	Antiquities included in the collections system of the National Archive of Monuments "POLEMON" (15th EPCA)	Prehistoric pottery, figurines and jewellery. Classical and Hellenistic pottery. Roman and silver coins. Classical and Hellenistic inscriptions and sculpture.	Prehistory-Roman	[not applicable]	1610 (pieces)
16th Ephorate of Byzantine Antiquities	Collection of Byzantine Museum of Kastoria	Byzantine and Post-Byzantine icons of Kastoria.	Byzantine-Post-Byzantine	[not applicable]	50
19th Ephorate of Prehistoric and Classical Antiquities	Collection of the Archaeological Museum of Komotini	Stone, metal, glass, bone artefacts of Thrace.	Prehistory-Roman	[not applicable]	475 (objects)
23rd Ephorate of Prehistoric and Classical Antiquities	Seals of Metaxa's Collection	Seals.	Bronze Age	[not applicable]	329
24th Ephorate of Prehistoric and Classical Antiquities	Excavation of Minoan settlement and Byzantine Monastery Pseira Sitia -Crete	Clay, metal and stone objects.	3000 BC - 800 AD	[not applicable]	30
	Excavation of Minoan town and palace, Petras Siteia, Crete	Clay and stone vases, inscribed tablets.	2500 BC-1300 BC	[not applicable]	50
	Excavation of Minoan settlement Mochlos Sitia, Crete	Clay, metal and stone objects.	3000 BC-1200 BC	[not applicable]	50
	Excavation of Late Minoan cemetery Kritsa Mirabello, Crete	Clay vases.	1300 BC-1000 BC	[not applicable]	20
	Excavation of Late Minoan settlements at Kavousi (Vrovtas and Kastro) Ierapetra, Crete	Clay, metal and stone objects.	1200 BC-700 BC	[not applicable]	30
	Excavation of Minoan settlement Halasmenos-Ierapetra, Crete	Clay vases and vessels, clay figurines and figures.	1200 BC-1100 BC	[not applicable]	50
	Excavation of Late Minoan settlement and Archaic town Azoria Kavousi Ierapetra, Crete	Clay, metal and stone objects.	1200 BC-500 BC	[not applicable]	40
	Excavation of Minoan burial cave Aghios Charalambos Lassithi, Crete	Clay, metal and stone objects, bones.	3000 BC-1800 BC	[not applicable]	30

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
25th Ephorate of Prehistoric and Classical Antiquities	Antiquities of Rethymnon Prefecture	Archaeological sites and artefacts. Vessels, sculpture, terracottas, inscriptions, tools, jewellery, coins, weapons, seal stones.	Neolithic-Roman	[not applicable]	c100
	Antiquities of Chania Prefecture	Archaeological sites and artefacts. Vessels, sculpture, terracottas, inscriptions, tools, jewellery, coins, weapons, seal stones.	Neolithic-Roman	[not applicable]	c100
26th Ephorate of Prehistoric and Classical Antiquities	Bronze Objects Collections	Bronze sculptures and other exhibits from the Archaeological Museum of Piraeus.	499 BC-300 BC	[not applicable]	11
	Funerary Monuments at the Archaeological Museum of Piraeus	Funerary sculptures, reliefs, vessels and monuments.	499 BC-100 BC	[not applicable]	110
	Collection of sculptures from Kalaureia and Troizen	Sculptures from the Archaeological Museum of Poros.		[not applicable]	3
	Collection of gravestones from Troizina	Gravestones from the Archaeological Museum of Poros.	Classical- Roman	[not applicable]	5
	Collection of votive reliefs	Collection of votive reliefs from the Archaeological Museum of Piraeus.		[not applicable]	10
	Neo – Attic reliefs	Neo-Attic decorative panels from Classical reliefs.	140-170	[not applicable]	13
	Collection of clay figurines	Collection of clay figurines from the Archaeological Museum of Poros.	Classical-Roman	[not applicable]	19
28th Ephorate of Byzantine Antiquities	Preveli Monastery Collection	Portable icons, liturgical vestments and vessels from the collection of the Preveli Monastery.	Late Byzantine- Post-Byzantine	[not applicable]	10
	Pottery Collection	Pottery from the Byzantine and Post-Byzantine Collection of Chania.	Byzantine-Venetian Period	[not applicable]	10
	Gonia Monastery Collection	Portable icons, ecclesiastical books and manuscripts from the collection of the Gonia Monastery.	Late Byzantine-Post-Byzantine	[not applicable]	10
	Sculpture Collection	Architectural sculpture from Rethymno and Chania.	Venetian Period	[not applicable]	10
	Arkadi Monastery Collection	Portable icons, liturgical vestments and vessels from the collection of the Arkadi Monastery.	Post-Byzantine	[not applicable]	10

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
2nd Ephorate of Byzantine Antiquities	Byzantine and Post-Byzantine painting in Cyclades	Icons and wall paintings from churches and ecclesiastical collections on the Cyclades islands.	Early Christian -1799	[not applicable]	20
2nd Ephorate of Prehistoric and Classical Antiquities	Collection of movable artefacts in the Archaeological Museum of Vravron	Clay, stone, bone and metal artefacts from the cemetery at Perati and from Merenta.	Mycenaean (1600 BC-1050 BC)	[not applicable]	1488
		Clay and stone artefacts from the Artemis Sanctuary at Vravron and from Merenta.	Geometric-Roman (1000 BC-200)		
	Collection of movable artefacts in the Archaeological Museum of Marathon	Clay, stone, bone and silver artefacts from the cemetery at Tsepi, Marathon.	Early Bronze Age (3200 BC-2000 BC)	[not applicable]	60
		Clay and marble artefacts from the cemeteries at Marathon and the surrounding areas.	Geometric-Roman (1000 BC-200)		
	Collection of movable artefacts in the Archaeological Museum of Lavrion	Clay and bone artefacts from the Kitsos cave.	Neolithic (5000 BC-3200 BC)	[not applicable]	223
		Clay artefacts from Thorikos.	Mycenaean-Classical (1600 BC-323 BC)		
		Inscriptions of mines from Lavreotiki.	Classical period (480-323 BC)		
33d Ephorate of Prehistoric and Classical Antiquities	Collection of the Nikopolis Arcaheological Museum (selected objects)	Sculptures, sarcophagi, architectural and clay objects and coins from Nikopolis.	Roman-Early Christian	[not applicable]	25
	Collection of the Arta Arcaheological Museum (selected objects)	Sculptures, architectural and clay vases and figurines together with coins from ancient Ambracia	Archaic, Classic, Hellenistic periods	[not applicable]	25
	Collection of movable finds from the archaeological museum of Tegea	Sculptures, clay vases, metal objects, figurines, inscriptions and architectural pieces.	7000 BC-399	[not applicable]	350
5th Ephorate of Byzantine Antiquities	Collection of objects of Byzantine and Post-Byzantine Art	Art objects of Byzantine and Post-Byzantine from Laconia.	300-1899	[not applicable]	12

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
6th Ephorate of Prehistoric and Classical Antiquities	Mycenaean Collection of the Archaeological Museum of Patras	Mycenaean pottery.	Mycenaean (1700-1000)	[not applicable]	c150
7th Ephorate of Prehistoric and Classical Antiquities	Exhibits in the Archaeological Museum of Olympia	Exhibits in the Archaeological Museum of Olympia from the famous Temple of Zeus at Olympia where the ancient Olympic Games were held throughout antiquity. These works of art were tributes to the highest of the gods Zeus during the resplendent period of the operation of the Olympia's sanctuary: • Olympia's oldest preserved bronze tripod cauldron (c1240 - 9th cent. BC); • The bronze Corinthian-type helmet of the Athenian general Miltiades; • Collection of the pedimental sculptures and the metopes of the Temple of Zeus; • The statue of Hermes with the infant Dionysus, work of Praxiteles; • The Nike of Paionios; • The terracotta complex of Zeus and Ganymede; • Collection of the statues of the Nymphaion.	Geometric-Roman (9th cent. BC - 2nd cent. AD)	[not applicable]	70
Department of Underwater Antiquities	Copper sculptures of marine origin	Collection of copper work art that came to the Department of Underwater Antiquities in the last twenty five years.	Hellenistic-Roman	[not applicable]	10
Ephorate of Palaeoanthropology and Speleology of Northern Greece	File of photographs	Cave Photographs of Northern Greece.	All Periods	[not applicable]	c80
Ephorate of Palaeoanthropology and Speleology of Southern Greece	Digital collection of the prehistoric cave of Theopetra	Photographic documentation of the excavation, collection of selected finds, informative text regarding the archaeological site.	Middle Palaeolithic-Neolithic	[not applicable]	30 (minimum)
	Collection of lithic artefacts from the Palaeolithic cave complex of "Lakonis", Gytheion	Lithic artefacts.	Palaeolithic period	[not applicable]	95
European Centre of Byzantine and Post-Byzantine Monuments	Digital Collection - Anna Komnene: Creation and promotion of electronic multilingual editions and of an information portal on monuments of the Byzantine Period	Secular and ecclesiastic Byzantine monuments.	Byzantine-Post-Byzantine (4th-18th century)	Greek 100%; English 100%; French 100%	55

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
LD' Ephorate of Prehistoric and Classical Antiquities	Collection of stone objects decorated with inscriptions and figures from Archaeological Museum of Karditsa	Inscribed stones and stones decorated with sculptured figures.	4th – 1st century BC	[not applicable]	9
	Collection of small metal objects from the excavations in the Thessalian Sanctuary of Athena Itonia Filias in the Archaeological Museum of Karditsa	Metal objects from the sanctuary of Athena Itonia at Filia Karditsa's.	Geometric -Archaic	[not applicable]	42
	Collection of idols in the Archaeological Museum of Karditsa	Clay, iron and bone objects.	Prehistoric -Hellenistic	[not applicable]	95
	Collection of burial objects in the ancient graves of Argithea Karditsa	Objects of clay, metal, inscribed stones, bone object and objects of glass.	"5th – 1st century B.C.".	[not applicable]	36
LH Ephorate of Prehistoric and Classical Antiquities	Collection of the Archaeological Museum of Messinia	Characteristic archaeological findings from Messinia.	Neolithic-Roman	[not applicable]	889
Lst' Eforia of Prehistoric and Classical Antiquities	Prehistoric Collection of the Leukas Archaeological Museum	• Palaeolithic and Neolithic artefacts; • Bronze Age finds from W. Dorpfeld's excavations at Nydri.	Palaeolithic-Middle Helladic	[not applicable]	200

Other – National research centre collection

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
National Hellenic Research Foundation	"PANDEKTIS" Digital Thesaurus of Primary Sources for Greek History and Culture	Ancient Greek and Latin inscriptions from Upper Macedonia, Aegean Thrace and Achaia.	Classical-1999	Greek 100%; English 80%	1200 (texts with photographs)
		Monastic Archives. Documents from Mount Athos and Patmos.			4917 (texts and 3000 thumbnails)
		Greek Painters after the Fall of Constantinople (1450-1830).			1200 (short biographies); 1600 (icons)
		Modern Greek Visual Prosopography (15th-20th centuries).			6160 (short biographies); 1600 (portraits)
		Heraldic database of Greece (14th-19th centuries).			300 (monuments with photographs)
		Greek Press Abroad (19th-20th centuries).			800 (metadata on newspapers and magazines); 200 (metadata on journalists)
		People employed in Further, Secondary and Primary Education (19th century).			8050 (short biographies); 500 (photographs)
		Industrial establishments and workshops in the Aegean.			1600 (texts with photographs)
		Travel literature on Southeast Europe and the Eastern Mediterranean (15th-19th centuries).			2500 (texts with 500 photographs)
		Greek cartography: the documents (15th-19th centuries).			290 (photographs with text)
		Name changes of settlements in Greece (1913-1962).			4000 (texts)

Other – Independent cultural organisation (audiovisual library and archive) collection

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
STUDIO-parallel circuit. Non profit organization for the promotion of the cinema	Collection of cinematographic magazines from the library	Cinematographic magazines.	1900-1999	Greek 100%; English 100%; French 100%	258 (issues)

Hungary

Museum collections

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Museum of Literature Petőfi (PIM)	Media Collection	Audiovisual documents from and about Hungarian writers.	1950-1999	Hungarian 100%	250 (audio files)
	Art Collection	Relics, photographs and art pieces connected to Hungarian writers.	1800-Present	Hungarian 100%	100
	Manuscript archive	Manuscripts of Hungarian writers.	1800-Present	Hungarian 100%	[?]
	Digital Academy of Literature (DIA)	Full text works of contemporary Hungarian writers.	1950-Present	Hungarian 100%	0

Sound archive collections

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Hungarian Radio	Sound and Music Archive	Radio programmes (Hungarian) and historical sounds.	1900-1999	Hungarian 100%	50,000 (15,000 sound and 35,000 music)

Israel

Museum collection

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
The Israel Museum	Museum collection online	African art, art of the Americas, ancient glass, Asian art, Billy Rose Art Garden, Chalcolithic and Canaanite periods, classical archaeology, contemporary art, design and architecture, Egyptian archaeology, European art, Hellenistic, Roman, and Byzantine periods, Islamic art and archaeology, Israeli art, Israelite and Persian periods, Jewish ethnography, Judaica,, modern art, numismatics, oceanic art, photography prehistoric cultures, prints and drawings, 'Shrine of the Book', and western Asiatic antiquities	233,000 BP-Present	English 60%; Hebrew 40%	2000

Library collection

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
National Library of Israel	Audio; Maps; Newspapers; Manuscripts and Transcription; Rare Books; Ketubbot – Jewish Contract Marriages; Talmudic Manuscripts; Treasures of the Library.	National Sound Archives. Ancient maps of Jerusalem. Holy Land maps. Ancient maps of historic cities. Early Hebrew newspapers. Einstein Archives Online. Digitized Book Repository. Worldwide Repository of Ketubbot. Online Treasury of Talmudic Manuscripts.	Medieval-Present	English; Hebrew; Latin; French; German; Aramaic.	6,000 Hours accessible in the library facilities; part of it is accessible in the Web; Ancient Maps of Jerusalem; 293 Map; 1300 Maps of the Holy Land; Historic cities c3,800 Maps; 150,000 pages; Early Hebrew Newspapers – 6 titles; Archival Database holds 43,000 records; 900 manuscripts – 3,000 images. Currently: 559 titles=746 items; 5 books are scanned and added each week; 3640 Ketubbot; Complete collection of all known Talmud, Mishna and Tosafta from libraries around the world.

Archive collections

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Israel State Archive	German Consulates in Palestine (Hebrew/ German, Record group 67)	German consulates since the 19th Century in Palestine.	1800-Present [all collections]	German 90%; Hebrew 10%	400,000
	Austrian Consulate in Palestine (German, Record Group 151)	Austrian consulate since the 19th Century in Palestine.	[see above]	[see above]	80,000
	Non-Official German Archives (German /Hebrew, Record Group 90)	German documents from diplomatic and private institutions taken by the British Authorities following the outbreak of World War II.	[see above]	[see above]	80,000
	Personal archive of Max Eitingen (mostly in German, Sub record group 72.52)	Leading psychoanalyst trained by Freud whose correspondence and personal archives have been digitised .	[see above]	[see above]	70,000
	Photographic collection of Beno Rothenberg (Hebrew, Sub record group 137.4)	Photographer that for tens of years have been documenting the Israel society.	[see above]	[see above]	3,200

Italy

Museum collections

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Superintendency to the National Gallery of Modern and Contemporary art – GNAM	Museum collection and bio-iconographical archive database	Italian and foreign sculpture.	1801-2000	Italian 100%	40,000 database records (250 images)
Querini Stampalia Foundation	Museum collection database (part of the collection)	Paintings, drawings, engravings, textiles, and porcelain.	1401-2000	Italian	c300

Aggregation (local)

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Soprintendenza per il Polo museale fiorentino (Superintendency to the Museums Pole in Florence)	Inventory database of the works located in the State Museums in Florence	Works of art and inventories.	300 BC-2008	Italian	17,000 (records already published. Work in progress, update and increase is continuous)

Other – Government department collection

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Soprintendenza Speciale per I Beni Archeologici di Napoli e Pompei (Special Superintentency for the Napoli and Pompei Archaeological Heritage)	Heritage Catalogue Database	Archaeological findings.	79	Italian 100%	20,000

Other – Local government department collection

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
1. Direzione regionale per i beni culturali e paesaggistici della Liguria 2. Regione Liguria – Dipartimento pianificazione territoriale	Liguria Vincoli. Map of all of the cultural sites that were “legally bound” in the territory of the Liguria Region, according to the Italian Law on cultural heritage and landscape.	Digitized Archives of Direzione regionale BAC and Regione Liguria.	50,000 BC-2008	Italian 100 %	c7000

Other – Cultural foundation collection

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Accademia nazionale di Santa Cecilia (St. Cecilia National Academy)	Academy collection	History of music in Rome and Italy from the 16th century to present times. National and international oral tradition music.	1650-2009	Italian 70%; Other 30% (European and Mediterranean languages)	c200,000

Luxembourg [No survey]

Latvia

Other – State agency collection

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Valsts Aģentūra "Kultūras informācijas sistēmas" (State agency “Culture Information Systems”)	Joint Catalogue of the National Holdings of Museums	Holds different museums' items about Latvia and world history: artefacts from archaeological digs, hoards of jewellery and coins, folk costumes, traditional tools, applied art, domestic items, natural objects, photographs, documents, maps, engravings, paintings and other Latvian historical, art and natural material.	Prehistory-Present	Latvian 100%	c10,000 (c5000 thumbnails)

Poland

Museum collection

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Państwowe Muzeum Archeologiczne w Warszawie (State Archaeological Museum)	Archaeological Museum collection database (7 digital collections)	Archaeological site, object and artefacts.	Prehistory-Medieval	[?]	c1000

Other – Non-governmental organisation (association) collection

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
International Centre for Information Management Systems and Services	Collection of photographs	Architecture and landscape of Poland	Prehistory-Present	[not relevant]	c30,000

Romania

Aggregation (national)

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
CIMEC – Institute for Cultural Memory	Classical Romanian literature	19th century, early 20th century Romanian literature.	1830-1939	Romanian 100%	193 textual works (i.e. 117 poems, 74 short texts, 2 books, c600 pages)
	Romanian Listed Movable Heritage	The official list of the Romanian Listed Movable Heritage.	Prehistory-1940	[?]	5000
	Medieval manuscripts	Medieval manuscripts in the Batthyaneum Collection (Alba Iulia).	1000-1785	Latin 94%; German 2%; French 2%; Hungarian 2%	766 volumes (c150,000 page images)
	Religious buildings in Romania	Images of churches, old and new.	1376-2008	[?]	4375
	Virtual Museum of the Ethnographical Monuments in Romania	Ethnographic monuments in Romanian open air museums.	1722-1960	[?]	758
	Incunabula in the Brukenthal collection (Brukenthal Museum Sibiu)	Incunabula.	1467-1498	Latin 95%; German 5%	79 objects (i.e. 79 volumes, 50,000 page images)
	The Romanian archaeological digital library (classical and contemporary)	Classical Romanian archaeological books and journals and contemporary excavation reports.	1886-2008	Romanian 90%; French 10%	55 objects (i.e. 48 books + 7 years, 12,000 page images)

Slovenia

Museum collections

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Slovene Ethnographic Museum	Folk art and pictorial sources collection Textile collection Crafts and trades collection Rural economy and transport collection Social culture collection Spiritual culture collection Rural economy collection non-European collections (Africa and Americas) Ethnographic film Slovene emigrants' collection Ethnographic photography collection	Painted beehive panels, Glass paintings, Headwear, Blue-printing, Ploughing implements, Toys, Music instruments, Kos's Japanese 17th century xylography, Baraga's collection of north American native people from 1st half of 19th century, Collection of photos and objects of German colony in Togo (1911 – 1914), Egyptian amulets, Knoblehar's collection of people in Sudan from 1st half of 19th century, Filmography of SEM, Archive of Slovenian emigrant handicrafts from Australia, Vesel's photographic collection	1750-1999	Slovene 100%	c2200
Technical Museum of Slovenia	Selected Technical Objects	Bicycles, road traffic objects, sewing machines, log sawing, mill objects, post until 1st World War, and printing.	[Several periods]	Slovene 100%	c500
Slovenian Museum of Natural History	Database of Invertebrate Pictures	Invertebrate animals (Invertebrata).	[recently living animals]	Slovenian 100%. English 100%	c950
National Museum of Slovenia	Print Room Collection	Religious themes, mythology, portrait genre, and views.	1500-1999	Slovene 100%	c1000 (in 2009)
Charintium Regional Museum	Postcard from Charintia	Postcards describing the development of Charintia.	1890-2009	Slovene 100%	c900

Archive collection

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Archives of the Republic of Slovenia	Land cadastre maps	Franciscean land cadastre digital maps	1817-1823	Slovene 100%	c29,000

Other – Government department collection

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Ministry of Culture of the Republic of Slovenia –Indoc Centre	Photographs on Glass Topographical Notes	Photographs of the objects of cultural heritage (on glass negatives). Topographical notes on the objects of cultural heritage (by several conservation specialists).	1910-1970 (photographs on glass) 1913-1968 (topographical notes)	Slovene 100%	c13,000

Sweden

Museum collections

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Länsmuseet Halmstad, County Museum of Halmstad	Länsmuseet Halmstads databas Elmer (The Museum collection digitised in our database Elmer)	Art, folk art, archaeology, archives, and pictures.	1900-1999 (Art, mainly); 1700-1899 (folk art); Prehistoric-Medieval (archaeology)	Swedish 100%	c100,000 (objects, photographs and books)
Murberget, County museum of Västernorrland	Murberget photograph database	Cultural history of Västernorrland County.	1900-2000	Swedish 100%	80,000
Stockholm County Museum (Stockholms läns Museum)	Photograph database	Photographs from Stockholm County.	1900-2009 (motivs from stoneage to today)	Swedish 100%	c20,000

Archive collection

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Riksarkivet (National Archives of Sweden) and Krigsarkivet (The Military Archives)	Swedish and non-Swedish military map, and city and fortress plan collection	Military maps, plans and drawings, many hand drawn.	1600-1899	Swedish 60% (Other languages represented in unknown numbers: English, German, French, Spanish)	c20,000

United Kingdom

Museums

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
Bristol City Council	Online museum collection database	Objects from all over the world, covering art, archaeology, social history, geology, and natural history.	Prehistory-Present	[not applicable]	c3000 images (150,000 object records)
Fitzwilliam Museum [Cambridge]	Fitzwilliam Museum Online Catalogue	Antiquities, applied arts (including sculpture, porcelain, pottery, glass, tiles, netsuke, armour, weapons, lacquer boxes, pot-lids and Korean ceramics), coins and medals, manuscripts, paintings, drawings and prints.	Palaeolithic-Present	[not applicable]	c66,000 (growing)
Royal Albert Memorial Museum and Art Gallery [Exeter]	Online museum collection database	Collections of archaeology, decorative arts, fine art, local history, natural history, and world cultures.	Prehistory-Present	[not applicable]	c5000 images (many more object records)
Victoria and Albert Museum [London]	Online museum collections database	Worldwide ceramics, fashion, furniture, glass, metalwork, paintings, photographs, prints, sculpture, and textiles.	3200 BC-Present	[not applicable]	c43,500 (c69,000 images)
Wiltshire Archaeological and Natural History Society (WANHS) [Devizes]	Online museum collection	Archaeology, recent history, natural history and art of Wiltshire; including some of the finest Bronze Age finds in the country from the World Heritage landscapes around Stonehenge, Avebury and Silbury Hill.	Palaeolithic-Present	[not applicable]	c7000 images (c84,000 records)

Other – Historic environment agency collection

Provider	Collection name	Collection themes or subjects	Time periods	Languages	Content amount
English Heritage [Swindon]	ViewFinder	Digitised photographs from the National Monuments Record's important collections. The ViewFinder picture gallery contains illustrations of the industrial age, social history, architecture and archaeology, dating from the 1840s to the present day. There are also photo essays which provide a commentary alongside selected images.	1840-Present	English 100%	c70,000 photographs; c50 photo essays